JVC-00803

RX-MXG7BK

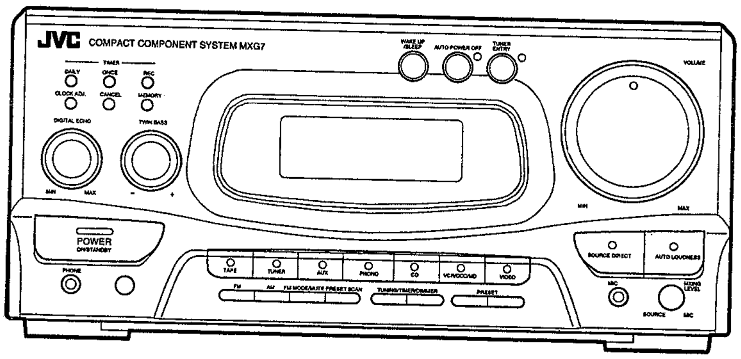
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

CA-MXG7BK/XT-MXG7BK

(Unit No. RX-MXG7BK)


JVC COMPACT COMPONENT SYSTEM MXG7
TIMER
DAILY
ONCE
REC
CLOCK ADJ.
CANCEL
MEMORY
DIGITAL ECHO
TWIN BASS
WAKE UP /SLEEP
AUTO POWER OFF
TUNER ENTRY
VOLUME
MIN
MAX
POWER ON/STANDBY
PHONE
TAPE
TUNER
AUX
PHONO
CD
VCR/VCD/MD
VIDEO
FM
AM
FM MODE/AUTO PRESET SCAN
TUNING/TIMER/DIMMER
PRESET
SOURCE DIRECT
AUTO LOUDNESS
MIC
MIXING LEVEL
SOURCE

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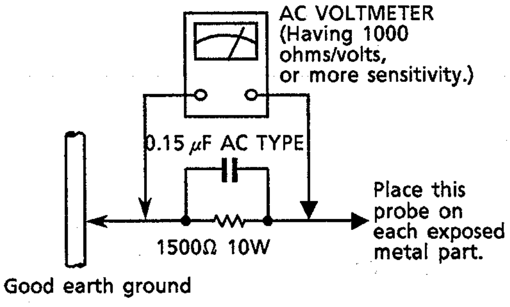
Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).

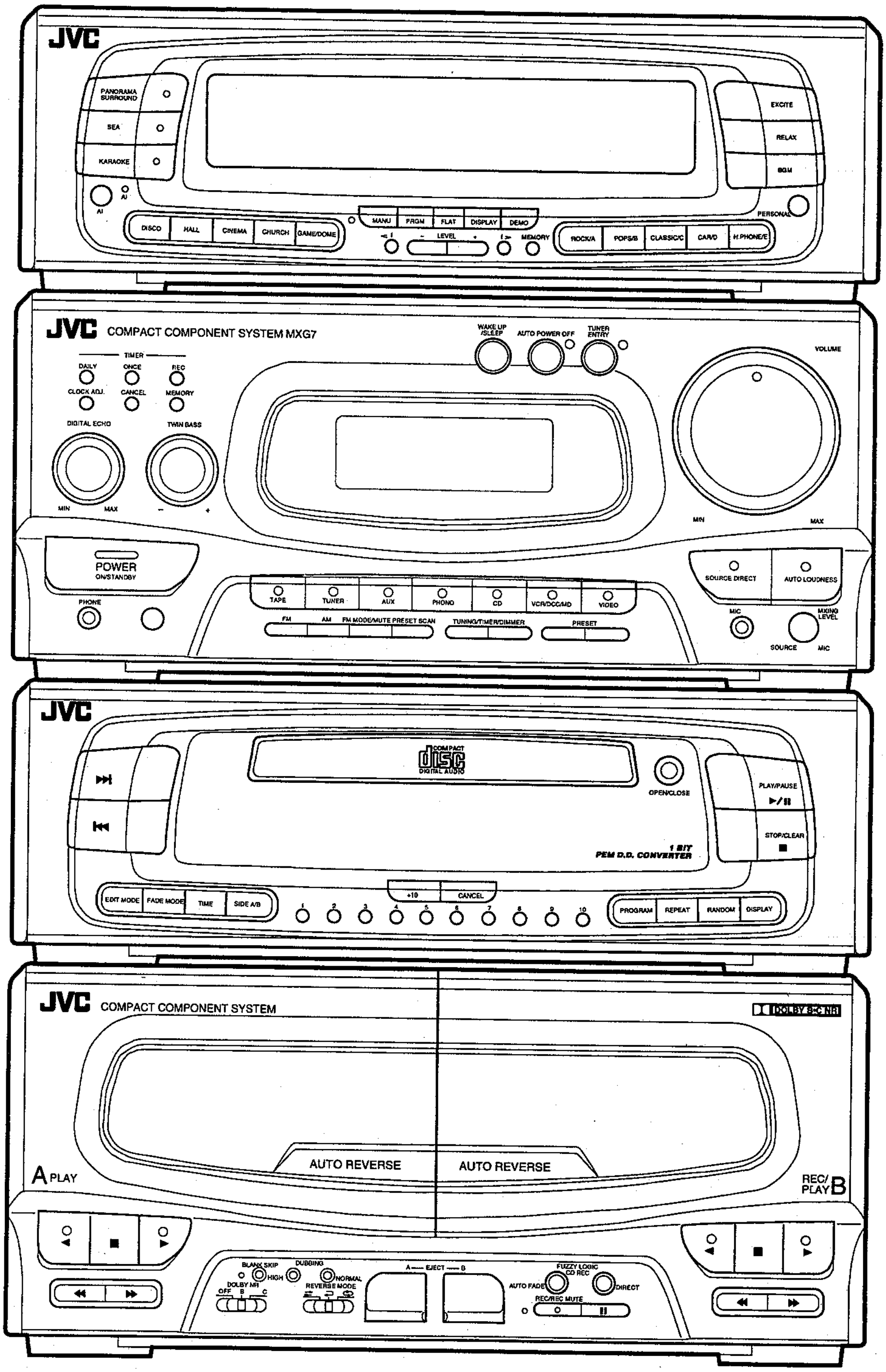


Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

RX-MXG7BK

Control Panel and Remote—Illustrations
Ilustraciones del panel de control y del mando a distancia
Illustrações — painel dos controle e telecomando
控制板與遙控器圖樣
لوحة التحكم ومسيطرعن بعد ـــ رسومات


JVC
PANORAMA SURROUND
SEA
KARAOKE
AI
AI
DISCO
HALL
CINEMA
CHURCH
GAME/DOME
MANU
PRGM
FLAT
DISPLAY
DEMO
LEVEL
MEMORY
ROCK/A
POPS/B
CLASSIC/C
CAR/D
H.PHONE/E
EXCITE
RELAX
BGM
PERSONAL
JVC COMPACT COMPONENT SYSTEM MXG7
TIMER
DAILY
ONCE
REC
CLOCK ADJ.
CANCEL
MEMORY
DIGITAL ECHO
MIN
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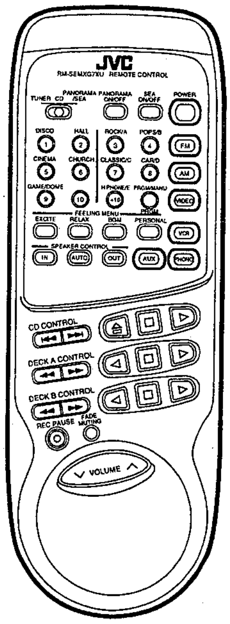
TWIN BASS
WAKE UP /SLEEP
AUTO POWER OFF
TUNER ENTRY
VOLUME
MIN
MAX
POWER ON/STANDBY
PHONE
TAPE
TUNER
AUX
PHONO
CD
VCR/DCC/MD
VIDEO
FM
AM
FM MODE/MUTE PRESET SCAN
TUNING/TIMER/DIMMER
PRESET
SOURCE DIRECT
AUTO LOUDNESS
MIC
MIXING LEVEL
SOURCE
MIC
JVC
COMPACT DISC DIGITAL AUDIO
OPEN/CLOSE
PLAY/PAUSE
STOP/CLEAR
1 BIT PEM D.D. CONVERTER
EDIT MODE
FADE MODE
TIME
SIDE A/B
+10
CANCEL
1
2
3
4
5
6
7
8
9
10
PROGRAM
REPEAT
RANDOM
DISPLAY
JVC COMPACT COMPONENT SYSTEM
DOLBY B-C NR
AUTO REVERSE
AUTO REVERSE
A PLAY
REC/PLAY B
BLANK SKIP
HIGH
DUBBING
NORMAL
DOLBY NR
OFF
B
C
REVERSE MODE
A — EJECT — B
FUZZY LOGIC CD REC
AUTO FADE
DIRECT
REC/REC MUTE


JVC
RM-SEMXG7XU REMOTE CONTROL
TUNER
CD
PANORAMA /SEA
PANORAMA ON/OFF
SEA ON/OFF
POWER
DISCO
HALL
ROCK/A
POPS/B
FM
CINEMA
CHURCH
CLASSIC/C
CAR/D
AM
GAME/DOME
H.PHONE/E
PRGM/MANU
VIDEO
FEELING MENU
PRGM
EXCITE
RELAX
BGM
PERSONAL
VCR
SPEAKER CONTROL
IN
AUTO
OUT
AUX
PHONO
CD CONTROL
DECK A CONTROL
DECK B CONTROL
REC PAUSE
FADE MUTING
VOLUME

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About this Manual

The Engineers at JVC have made the CA-MXG7BK very easy to use, and if you are experienced using audio equipment, you can figure out how to use some of the CA-MXG7BK controls by yourself. However, we have built some new features into this model, which you can learn about easily from the manual.

If you are a new user or just want a review, this manual explains how to use the CA-MXG7BK and take advantage of its features for playing and recording music, as well as other sounds. One way to use this manual is to read it through now and refer back to it when you need to refresh your skills for some special operation. Of course you can just look up the topics for things you want to do, such as recording a CD, but remember that you may need to refer to other parts of the manual for some of the instruction: for instance, in explaining how to record a CD, we assume you already know how to load a CD. That's why we recommend that you read the manual through once before starting. We've made it short, and easy to follow.

However, before you proceed, please read the Cautions on page 3 and the set-up directions.

How This Manual Is Organized

This manual is designed to accommodate several languages. To keep the size from becoming too great, yet still give you a top quality instruction manual, we have incorporated some special features:

- This manual is composed of 2 parts:
  Easy Guide (page 1-8) and Features Guide (page 9 - 37). Easy Guide describes basic operations and Features Guide describes other operations specific to this Unit.
- A fold-out page to look at while you read the instructions shows the front controls of the CA-MXG7BK. Some procedures have the illustrations of which control to use right with them, and for some you will need to look at the fold-out for the illustration.
- Basic information that is the same for many different functions is grouped in one place, and not repeated in each procedure. For instance, in the section on playing a CD, we do not repeat the information about setting the volume and the sound conditioning, which we talked about in the Easy Guide section.
- The illustrations on the left of the page are labeled to correspond to the explanations on the right. If a procedure is labeled with steps 1, 2, 3, then the illustrations on the left will also be labeled 1, 2, 3. This relationship makes it easy to read the explanation and also see what to do to accomplish your goal.

The manual has a table of contents to help you easily look up what you want to know.
We've enjoyed making this manual for you, and hope you will use it to enjoy the sound and many features built into your CA-MXG7BK.

Optional Speakers (SP - MXG7BK)

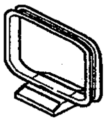
The optional speakers, SP-MXG7BK, are available from your dealer with instructions explaining how best to use them with the CA-MXG7BK. Of course you can use your CA-MXG7BK Unit satisfactorily with a variety of speakers. However, the Special Optional Speakers are designed to give the most performance from the new sound system features of the CA-MXG7BK.
The Optional Speakers are specifically designed for the CA-MXG7BK, so we don't recommend connecting them to other equipment.

Easy Guide

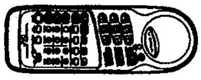
Getting Started

Check to be sure you have all of the following things, which are supplied with the CA-MXG7BK.

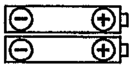
If any are missing, contact your dealer immediately.



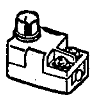
AM Antenna



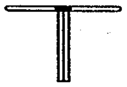
Remote Control



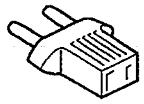
Batteries



Antenna Adaptor



FM Feeder Antenna



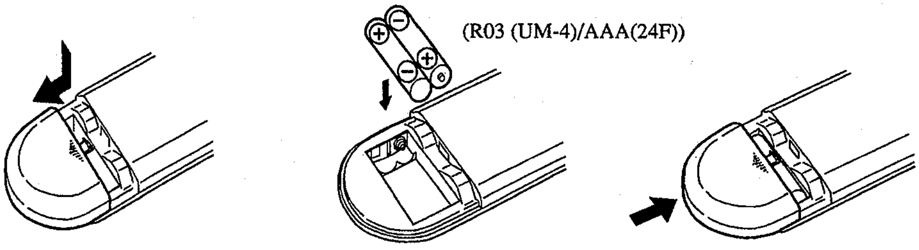
AC Plug Adaptor

IMPORTANT CAUTIONS

1. **Installation of the Unit**
   - Select a place which is level, dry and neither too hot nor too cold (between 5°C and 35°C).
   - Leave sufficient distance between the Unit and your TV.
   - Do not use the Unit in a place subject to vibrations.
2. **Power cord**
   - Do not handle the power cord with wet hands!
   - When unplugging from the wall outlet, always pull the plug, not the power cord.
   - A small amount of power (16 watts) is consumed even in the STANDBY mode. To shut off the power completely, unplug the power cord from the outlet.
3. **Malfunctions, etc.**
   - There are no user serviceable parts inside. If anything goes wrong, unplug the power cord and consult your dealer.
   - Do not insert any metallic object into the Unit.

Putting Batteries in the Remote

Pay close attention to getting the batteries in correctly—we've made it very easy, just match the + and - marks on the batteries with the + and - markings on the Remote.

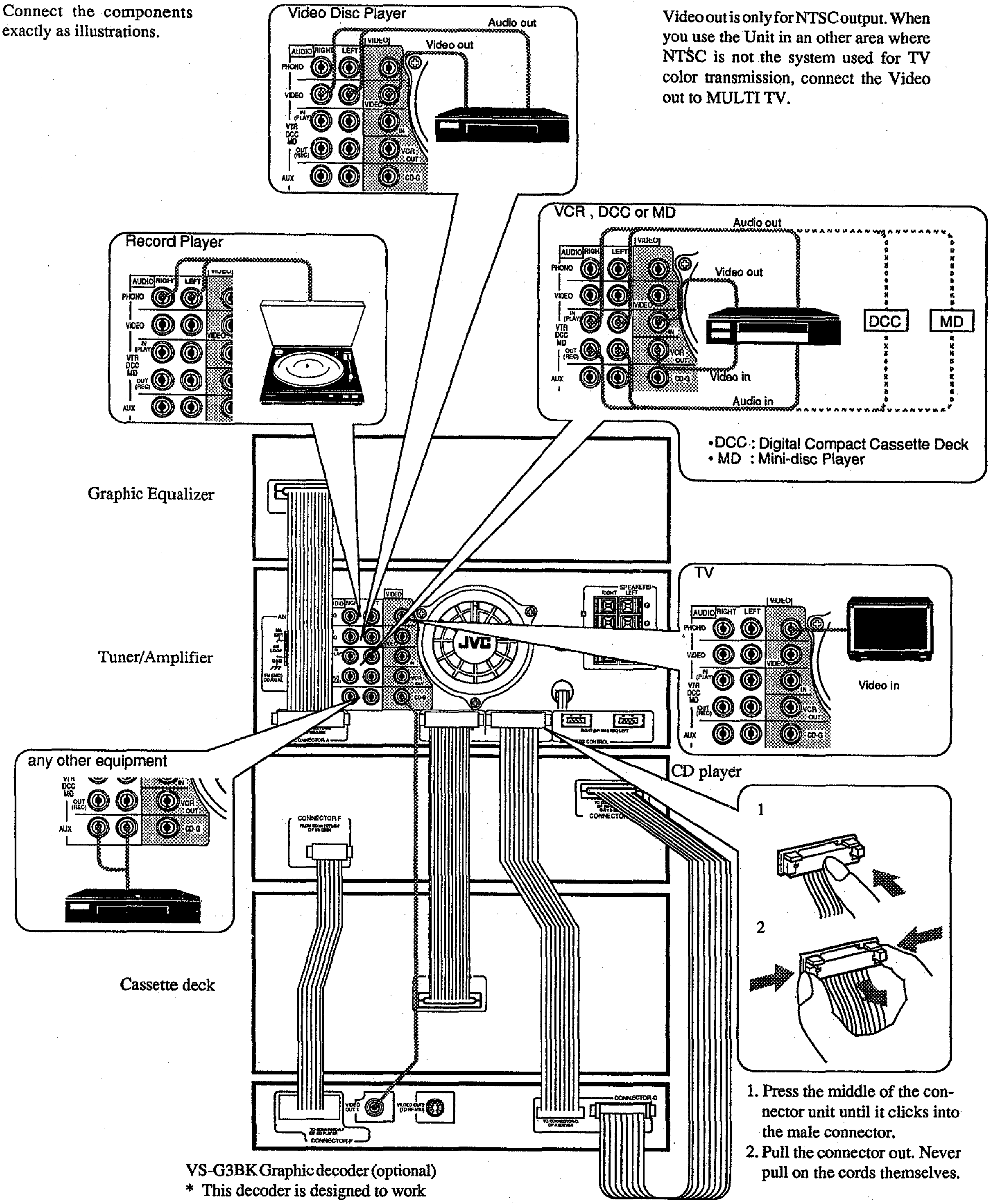


CAUTION: Observe Proper Handling of Batteries.
To avoid battery leakage or explosion:
- Remove batteries when the Remote will not be used for a long time.
- When you need to replace the batteries, replace both batteries at the same time with new ones.
- Don't use an old battery together with a new one.
- Don't use different types of batteries together.

Connecting the System Control Cords and Connecting Auxiliary Equipment

Connect the components exactly as illustrations.

Video out is only for NTSC output. When you use the Unit in an other area where NTSC is not the system used for TV color transmission, connect the Video out to MULTI TV.


Video Disc Player
Audio out
Video out
Record Player
VCR , DCC or MD
Video out
Video in
Audio in
DCC
MD
•DCC : Digital Compact Cassette Deck
• MD : Mini-disc Player
Graphic Equalizer
Tuner/Amplifier
JVC
TV
Video in
any other equipment
CD player
Cassette deck
AUDIO
RIGHT
LEFT
VIDEO
PHONO
IN (PLAY)
VTR DCC MD
OUT (REC)
AUX
VCR OUT
CD-G
CONNECTOR F
CONNECTOR G
1
2

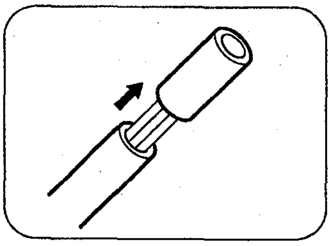
1. Press the middle of the connector unit until it clicks into the male connector.
2. Pull the connector out. Never pull on the cords themselves.

VS-G3BK Graphic decoder (optional)
* This decoder is designed to work with the NTSC colour system only. Use the TV that designed for the NTSC system.

* Match the polarity of the 5 terminals. A-A, B-B, C-C, RIGHT-RIGHT, LEFT-LEFT. RIGHT and LEFT are for speakers.

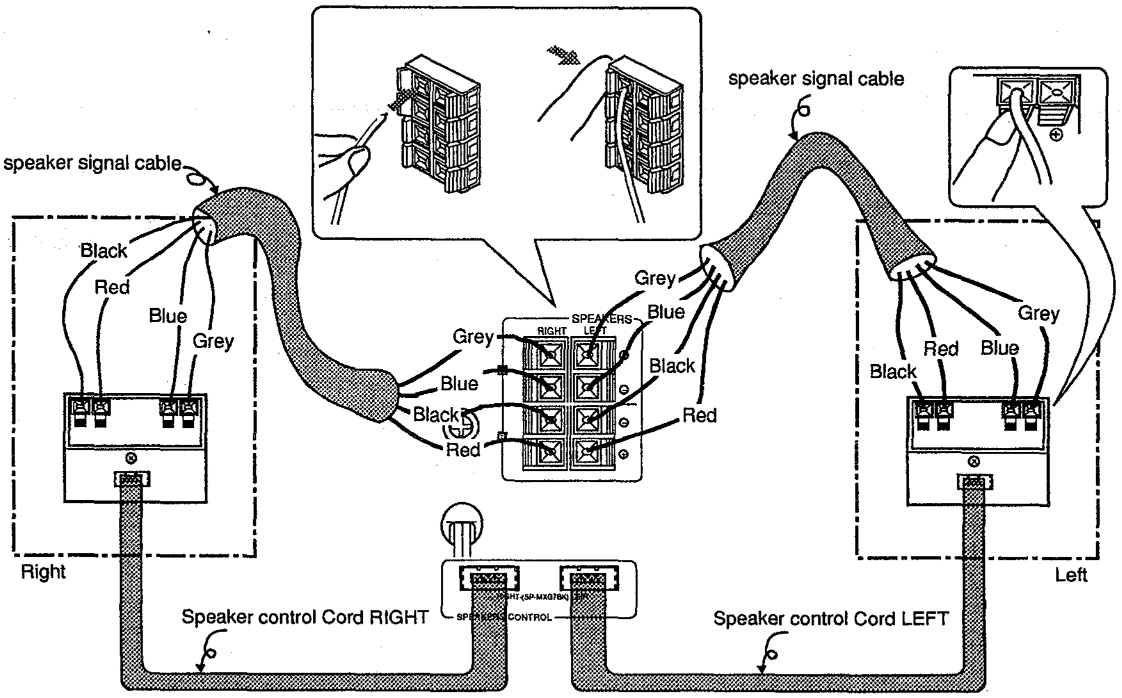
CAUTION: First make all connections before plugging the Unit into any AC power outlet.

Connecting the Optional Speakers (SP-MXG7BK)

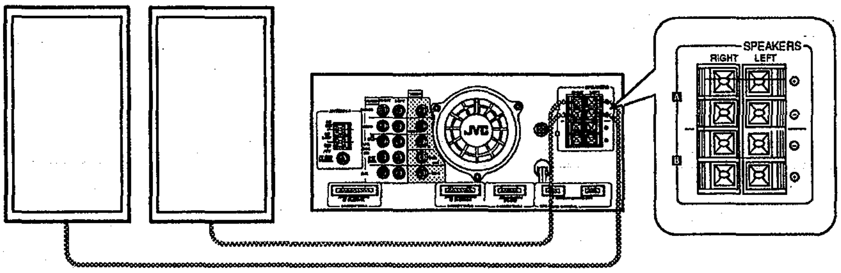


For each speaker connect one end of the supplied speaker signal cable to the speaker terminals on the back of the CA-MXG7BK and one end to the speaker. On the back panel:

1. Open each terminal.
2. Insert the end of the speaker signal cable as shown (be sure to remove the insulation at the end of each wire first).
3. Close the terminals to clamp the speaker signal cable firmly in place.
4. Connect the black (-), red (+), blue (-) and grey (+) terminals of the right side speaker to the black (-), red (+), blue (-) and grey (+) terminals marked RIGHT on the CA-MXG7BK.
   Connect the black (-), red (+), blue (-) and grey (+) terminals of the left side speaker to the black (-), red (+) blue (-) and grey (+) terminals marked LEFT on the CA-MXG7BK.
5. Connect SPEAKERS CONTROL RIGHT and LEFT with the supplied speaker control cords.

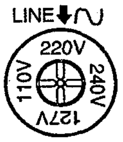

speaker signal cable
Black
Red
Blue
Grey
Right
speaker signal cable
Grey
Blue
Black
Red
SPEAKERS
RIGHT
LEFT
Grey
Blue
Black
Red
Grey
Red
Blue
Black
Left
Speaker control Cord RIGHT
SPEAKERS CONTROL
Speaker control Cord LEFT

Connecting Conventional Speakers


SPEAKERS
RIGHT
LEFT
A
B
JVC

- Connect the (+) and (-) terminals of the right speaker to the grey (+) and blue (-) terminals marked A RIGHT on the CA-MXG7BK.
- Connect the (+) and (-) terminals of the left speaker to the grey (+) and blue (-) terminals marked A LEFT on the CA-MXG7BK.

Note:
You can only use A RIGHT and LEFT terminals to connect conventional speakers.

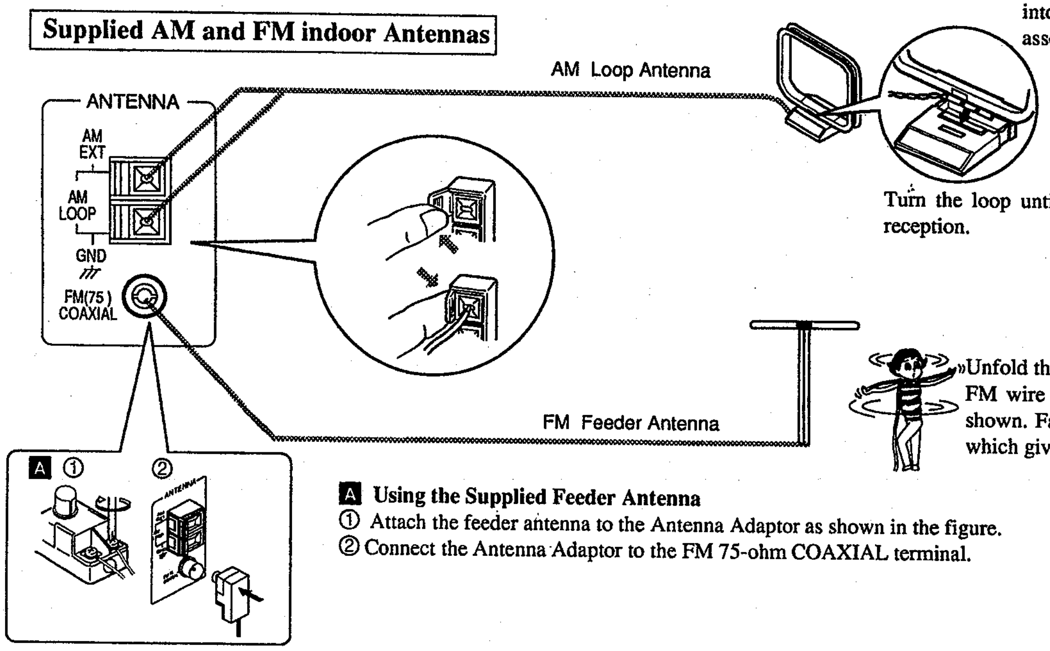

LINE
220V
110V
240V
127V

Set the VOLTAGE SELECTOR Switch

To avoid damaging the CA-MXG7BK, set the voltage before pluging in the unit.
Set the correct voltage for your area with the VOLTAGE SELECTOR switch on the back panel.
Use a screwdriver to rotate the selector so the number the arrow is pointing at is the same as the voltage where you are pluging in the Unit.

Connecting the AM and FM Antennas

Supplied AM and FM indoor Antennas


ANTENNA
AM EXT
AM LOOP
GND
FM(75) COAXIAL
AM Loop Antenna
FM Feeder Antenna
A ①
②

Snap the tabs on the loop into the slots of the base to assemble the AM loop.

Turn the loop until you have the best reception.

»Unfold the loops of the supplied dipole FM wire antenna and extend them as shown. Fasten them up in the position which gives you the best FM reception.

A Using the Supplied Feeder Antenna

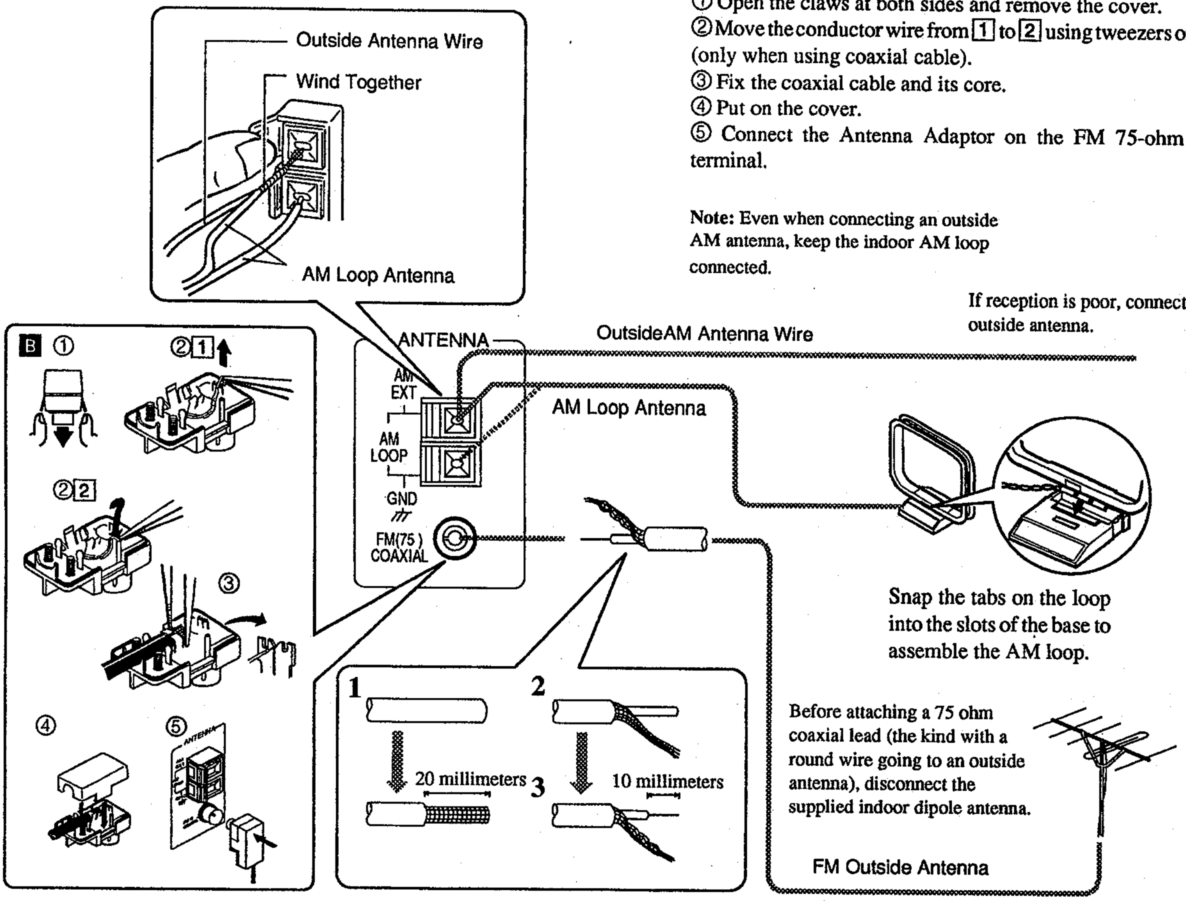
① Attach the feeder antenna to the Antenna Adaptor as shown in the figure.
② Connect the Antenna Adaptor to the FM 75-ohm COAXIAL terminal.

Outdoor Antenna Connections

B Using FM 75-ohm Antenna Cable (Not Supplied)

① Open the claws at both sides and remove the cover.
② Move the conductor wire from 1 to 2 using tweezers or similar tool (only when using coaxial cable).
③ Fix the coaxial cable and its core.
④ Put on the cover.
⑤ Connect the Antenna Adaptor on the FM 75-ohm COAXIAL terminal.

Note: Even when connecting an outside AM antenna, keep the indoor AM loop connected.


Outside Antenna Wire
Wind Together
AM Loop Antenna
ANTENNA
AM EXT
AM LOOP
GND
FM(75) COAXIAL
OutsideAM Antenna Wire
AM Loop Antenna
B ①
② 1
② 2
③
④
⑤
1
2
20 millimeters
3
10 millimeters
FM Outside Antenna

If reception is poor, connect the outside antenna.

Snap the tabs on the loop into the slots of the base to assemble the AM loop.

Before attaching a 75 ohm coaxial lead (the kind with a round wire going to an outside antenna), disconnect the supplied indoor dipole antenna.

If reception is poor, connect an outside antenna.

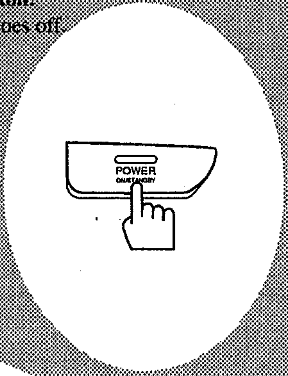
How to Strip the 75-ohm Coaxial Cable

1. Strip back the outside covering of the 75 ohm coaxial cable to expose the braided metallic mesh.
2. Pull the mesh back and twist into a single connector as shown.
3. Strip the insulation about 10 mm back from the central wire.
4. Attach to the Antenna block on the back panel, as shown in the diagram above.

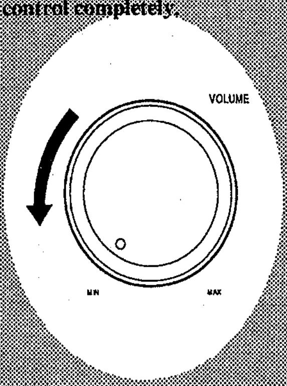
Turning on the Unit, Playing from a Tape, and Fast Winding or Rewinding

Turning on

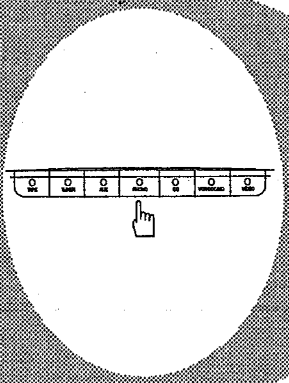
1. Press the POWER ON/ STANDBY button.
The LED on it goes off.



2. Turn down the VOLUME control completely.



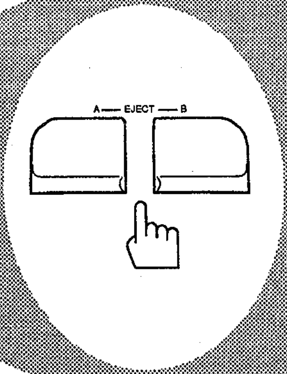
3. Start a source playing.



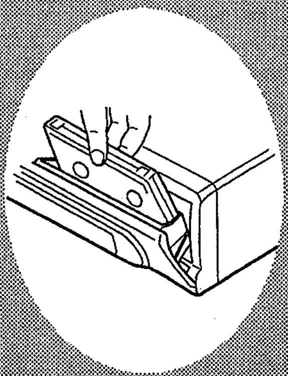
To turn off the Unit
Press the POWER ON/STANDBY button.
The LED on it lights up.

Playing a Tape

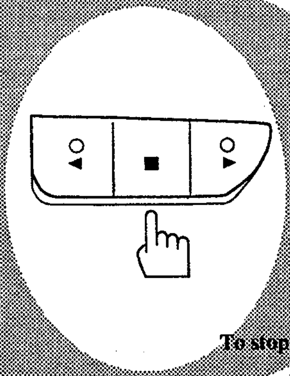
1. Press the EJECT button.



2. Put a tape in deck A or deck B.



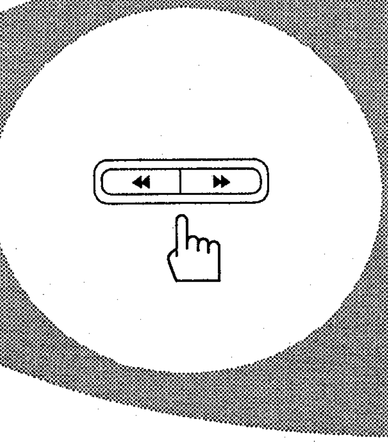
3. Press the ► (or ◄) button.



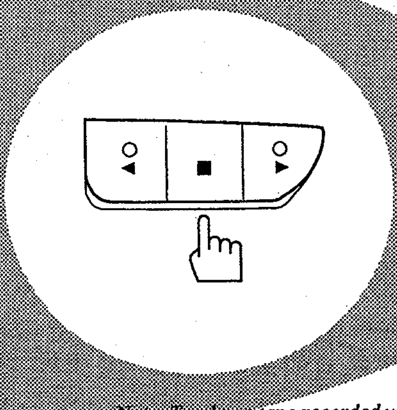
To stop playing
Press the ■ button.

Fast Winding or Rewinding

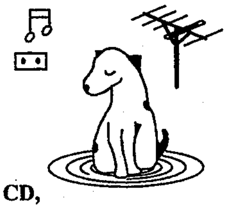
1.Press the ◄◄ or ►► button.



2. To stop the Fast Winding or Rewinding
Press the ■ button.



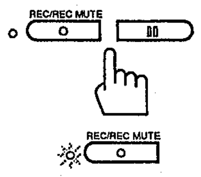
Note: To play a tape recorded with Dolby NR effect, see page 18 of the Features Guide section.



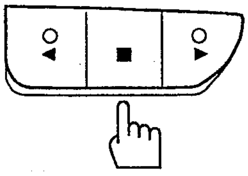
Recording onto a Tape, Receiving Radio Broadcasts, and Playing CDs

Recording onto a Tape

1. Press the REC/REC MUTE ○ button and the ❚❚ button simultaneously.
The LED next to them lights up and the Unit will be in recording pause.



2. Start playing the source you want - CD, Radio, etc.
Press the ► (or ◄) button, depending on which side you want record on, to start recording.

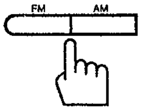


The LED on the ◄ (or ►)button will slowly blink to indicate recording is now on.

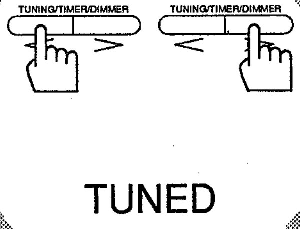
To stop the Recording
Press the ■ button.

Receiving Radio Broadcasts

1. Press the FM or AM button to select the band.

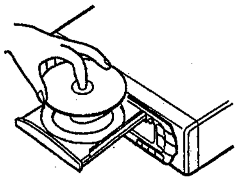


2. Press the TUNING/TIMER/DIMMER < or > button to tune in the desired stations.
When the Unit tunes in the station, TUNED lights up on the display.

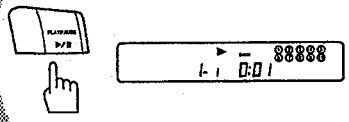


Playing CDs

1. Press the ▲ OPEN/CLOSE button . Load a CD on the tray.



2. Press the PLAY/PAUSE ►/ ❚❚ button.
The CD starts playing.

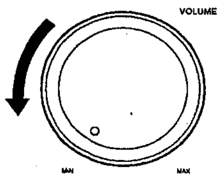


To stop the CD playing
Press the STOP/CLEAR ■ button.

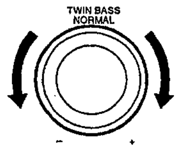
Note: To record a tape with Dolby NR effect, see page 18 of the Features Guide section.

Features

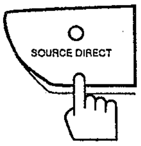
A



B

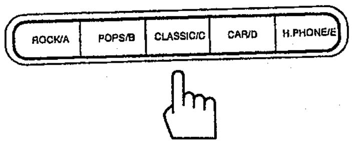


C

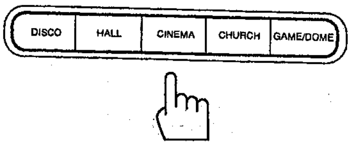


D

SEA preset buttons



Panorama Surround mode buttons



A. Volume Control

CAUTION: Always set the VOLUME control to MIN before turning on a connected source such as a VCR or Record Player, or starting any of the other sound sources such as the radio, tape, or CD player. If the VOLUME control is left turned up, the sudden blast of sound energy can permanently damage your hearing and/or ruin your speakers.

STEREO ETIQUETTE

Have consideration for others.
Set the volume to a level which will not disturb others. At night, the CA-MXG7BK can still be enjoyed at low volume levels. Close the window or use headphones to avoid disturbing others.

B. Bass Control

You can reduce or increase the amount of Bass reinforcement by adjusting the TWIN BASS control. When set to the NORMAL position, no bass reinforcement is applied.

C. High-fidelity Playback

Press the SOURCE DIRECT button. By bypassing the Panorama mode and SEA circuits, the path of the audio signal will be shortened, giving a higher fidelity sound.

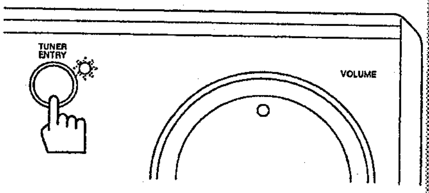
D. Special Effects Controls:

SEA Preset Pattern and Panorama Surround mode

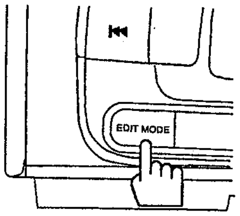
These ten buttons on the main Unit, each with an indicator that lights up on the display to tell you when it's on, are located just below the display window.
Things to remember about using special effects:

- Experiment with and set your special effects *before* you start recording with Fuzzy CD Recording or Auto Edit, because once recording starts, the special effects cannot be changed without stopping recording, and often having to start over. If you need different sound effects for each selection, use the standard recording features described in the Easy Guide section.
- When SEA preset buttons are pressed,the LED on the SEA button also comes on. If you don't want to use the effect pattern, just press the SEA button, and when the LED goes off, so does the SEA effect. When the Panorama Surround mode button is pressed, the LEDs on the SEA and Panorama Surround buttons also come on. To turn off a Panorama Surround effect, just press the Panorama Surround mode button again. When the LED goes off, so does the Panorama Surround effect.

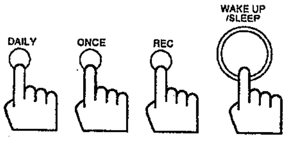
E


TUNER ENTRY
VOLUME

F

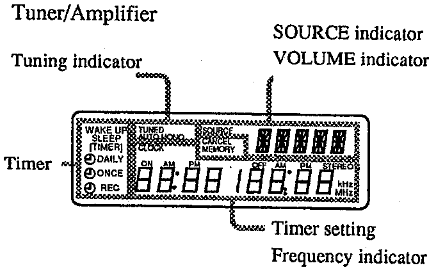


G

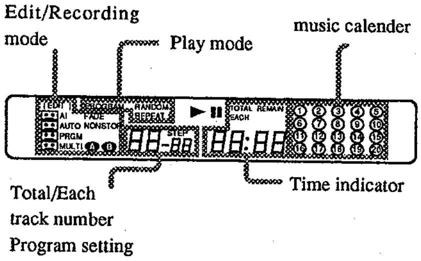

DAILY
ONCE
REC
WAKE UP /SLEEP

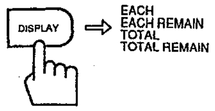
H

Tuner/Amplifier


SOURCE indicator
Tuning indicator
VOLUME indicator
Timer
WAKE UP
SLEEP
(TIMER)
DAILY
ONCE
REC
Timer setting
Frequency indicator

CD player


Edit/Recording mode
Play mode
music calender
Total/Each track number
Program setting
Time indicator


DISPLAY
EACH
EACH REMAIN
TOTAL
TOTAL REMAIN

E. Using the Tuner Entry Function

With Tuner Entry on, the Unit automatically shifts to the most recently played radio station when a tape or CD comes to an end.(See Page 26)

- Press the TUNER ENTRY button. The LED next to it lights up when Tuner Entry is on and is off when Tuner Entry is off.
- In two situations, even if Tuner Entry is on, it will not take effect:
  When you intentionally stop the CD or tape deck by pressing the STOP/CLEAR■ button on the CD player or the ■ button on the tape deck.
  When any timer activated CD or tape stops playing.

F. Using the Edit Functions

By using one of the four Edit Functions, AI Edit, Auto Edit, Program Edit and Multi Edit, the Unit can figure out how to arrange CD tracks on a tape. When you are recording a tape from a CD, the selections are not cut off if the tape ends before the selection does.

G. Using the Timers

Three timers, REC TIMER, ONCE/DAILY TIMER and WAKE UP/SLEEP TIMER are extremely easy to set so you can really use them.

H. The Display and the LEDs—Two Very Useful Hints

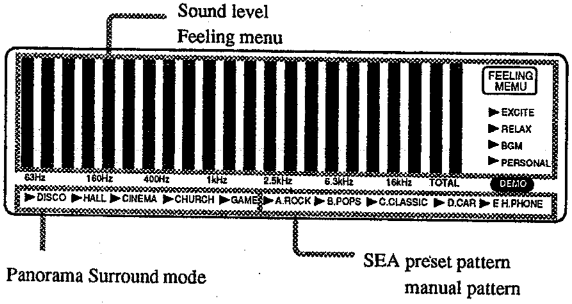
- The display area is large and clear. It's organized so you can tell at a glance what's happening because functions light up as you use them, and blink to tell you when they are ready.
- Some of the controls have a small light, called an LED right next to or even right on the function button or knob itself. The light comes on when the function is on, and goes out when it is not in use.

Dimmer Funcyion

When the Unit is turned off, with this function you can control the display brightness.

Press the TUNING/TIMER/DIMMER < or > button.
<: makes the display dimmer
>: makes the display brighter

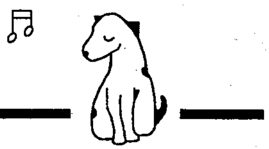
Graphic Equalizer


Sound level
Feeling menu
FEELING MEMU
EXCITE
RELAX
BGM
PERSONAL
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
DEMO
DISCO
HALL
CINEMA
CHURCH
GAME
A.ROCK
B.POPS
C.CLASSIC
D.CAR
E.H.PHONE
Panorama Surround mode
SEA preset pattern
manual pattern

Listening with Headphones

A standard pair of headphones can be connected at the PHONES jack on the front panel. **Be sure to turn down the volume before connecting or putting on headphones, as high volume can damage both the headphones and your hearing.**

Adjusting the Sound

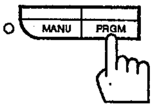


SEA preset patterns: SEA allows you to select one of five pre-programmed sound patterns (program mode) or to create your own sound patterns (manual mode).

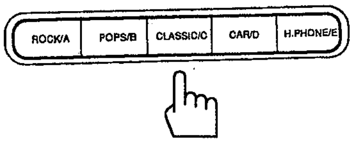
Panorama Surround mode: With five PANORAMA mode buttons and the panorama shifting speakers (optional), the sound field can be enlarged to give a more reaistic concert-like sound.

From the Unit

1

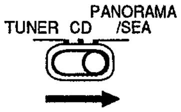


2


ROCK/A
POPS/B
CLASSIC/C
CAR/D
H.PHONE/E

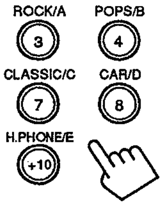
From the Remote

1


TUNER
CD
PANORAMA /SEA

2

3

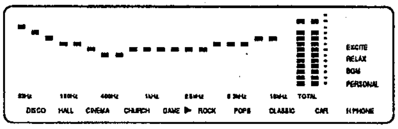

ROCK/A
3
POPS/B
4
CLASSIC/C
7
CAR/D
8
H.PHONE/E
+10

Using the SEA Preset Patterns

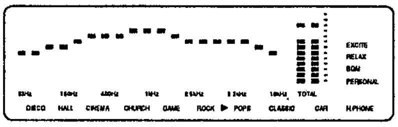
1. **Press the PRGM button to select the SEA preset mode.**
   The LED next to it goes off. If the LED is lit, the Unit is in the SEA manual mode (that is, for creating your own sound; see page 12).

2. **Press the SEA preset button to select the SEA preset pattern you want.**
   The LED on the SEA button lights up.

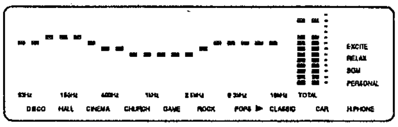
ROCK	Increases both treble and bass sounds.


EXCITE
RELAX
BGM
PERSONAL
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME
ROCK
POPS
CLASSIC
CAR
H.PHONE

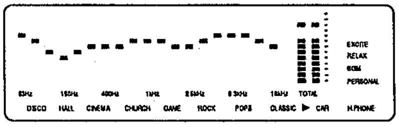
POPS	Increases the richness and fullness of the vocal sound.


EXCITE
RELAX
BGM
PERSONAL
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME
ROCK
POPS
CLASSIC
CAR
H.PHONE

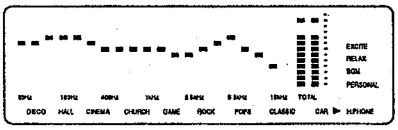
CLASSIC	Adds depth and brilliance to the sound.


EXCITE
RELAX
BGM
PERSONAL
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME
ROCK
POPS
CLASSIC
CAR
H.PHONE

CAR	For recording onto car stereo tapes.


EXCITE
RELAX
BGM
PERSONAL
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME
ROCK
POPS
CLASSIC
CAR
H.PHONE

H.PHONE	For recording onto headphone stereo tapes.


EXCITE
RELAX
BGM
PERSONAL
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME
ROCK
POPS
CLASSIC
CAR
H.PHONE

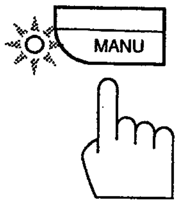
You can also use the Remote to select the SEA preset patterns.

1. Set the TUNER/CD/ PANORAMA SEA selector to the PANORAMA/ SEA position.
2. Press the PRGM/MANU. button so that the LED next to the MANU. button turns off.
3. Press the SEA preset button to select the SEA preset patterns.

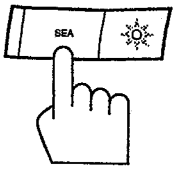
To cancel the SEA effect, press the FLAT button.

To get back the cancelled effect, select the cancelled pattern again.

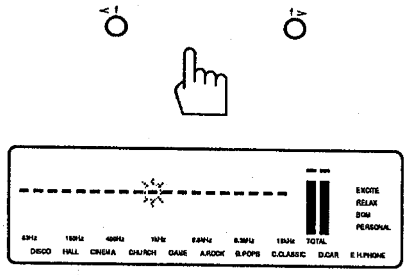
1



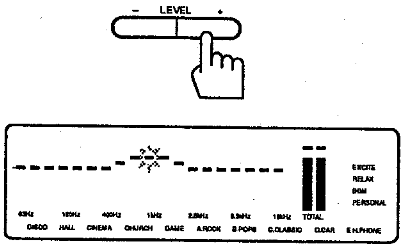
2



3


EXCITE
RELAX
BGM
PERSONAL
63Hz 160Hz 400Hz 1kHz 2.5kHz 6.3kHz 16kHz TOTAL
DISCO HALL CINEMA CHURCH GAME A.ROCK B.POPS C.CLASSIC D.CAR E.H.PHONE

4


– LEVEL +
EXCITE
RELAX
BGM
PERSONAL
63Hz 160Hz 400Hz 1kHz 2.5kHz 6.3kHz 16kHz TOTAL
DISCO HALL CINEMA CHURCH GAME A.ROCK B.POPS C.CLASSIC D.CAR E.H.PHONE

Creating Your own SEA Patterns

1. **Press the PRGM/ MANU. button to select the manual mode.**
   The LED next to it lights up.

2. **Press the SEA button.**
   The LED on it lights up.
   (Or, press the <f, f> button instead. The LED on the SEA button lights up.)

3. **Press the <f, f> button to set the frequency range to be changed.**
   The frequency range level bar on the display will blink.
   Each time you press the <f, f> button, the frequency range changes up or down. While it is blinking you can set the frequency level.

4. **Press the - LEVEL + button to set the level,while the selected frequency range level bar is blinking.**

5. **Repeat steps 3 and 4 to adjust other frequency ranges.**
   You can adjust 7 frequency ranges.

Note

Although the five SEA preset patterns cannot be changed, an individual sound pattern can be created based on a preset pattern. When you make any change to the SEA preset pattern, the Unit automatically enters the manual mode so you can modify and store the pattern you create.

To store the pattern

1. Press the MEMORY button after creating your own SEA pattern.

2. Press the SEA preset button to store the pattern in memory A, B, C, D, or E.
   Whole ranges on the display will blink and tell you the pattern is stored.

Recording the SEA Sound Pattern

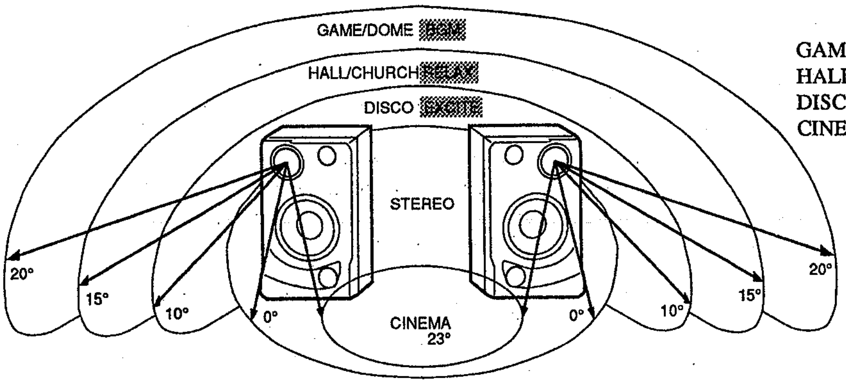
To record sound together with a SEA sound pattern (either a preset or manual one), first turn on SEA and select the desired sound pattern. The music will be enhanced according to the pattern you selected. SEA sound patterns cannot be applied to the following types of recording:

- A song cannot be dubbed (at either normal or high speeds)with a SEA sound pattern.
- When the amplifier's SOURCE DIRECT is ON, songs cannot be recorded with a SEA sound pattern.

Using PANORAMA SURROUND

Panorama Surround Mode

With five Panorama Surround modes and the panorama shifting speakers (optional), the sound field can be enlarged to give a more realistic sound. By connecting the Optional Panorama Shifting Speakers, the angle of the speakers will shift in accordance with the respective Panorama Surround mode:DISCO, HALL, CINEMA, CHURCH, GAME/DOME.



GAME/DOME	will shift outward 20°
HALL CHURCH	will shift outward 15°
DISCO	will shift outward 10°
CINEMA	will shift inward 23°

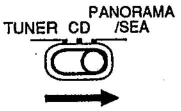
Notes

- *Panorama Shifting Speakers inside the cabinet will shift corresponding to the respective Panorama Surround mode. The speakers shift automatically inward or outward to give you the dynamic sound fields.*
  The mode and the speaker angle can be set from either the Unit or the Remote.
- *In the CINEMA mode, the speakers will shift inward to give a movie theater effect and make the spoken words easier to hear.*
- *Normally, the speakers face directly forward.*

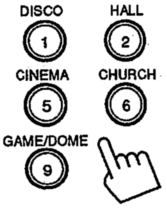
From the Remote

Selecting the mode

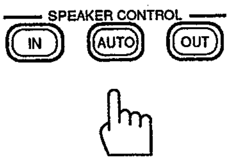
1



2



Changing the speaker angle



Try listening to the source in various Panorama Surround modes. By using the Remote you can stand back and hear the sound differences as you change modes.

1. **Set the TUNER/CD/PANORAMA SEA selector on the Remote to the PANORAMA/SEA position.**

2. **Select the Panorama Surround mode.**

DISCO	gives the throbbing bass beat of a disco.
HALL	gives clear vocals and the feeling of a recital hall.
CINEMA	gives a movie theater feel and makes the spoken words easier to hear.
CHURCH	reproduces the echo effect of a stone-walled church.
GAME/DOME	gives the spacious feeling of a domed stadium.

- When using the main Unit, simply press the Panorama mode button.

To change the speaker angle.

Press the IN/OUT button to change the angle.
The indicator will blink to indicate the speaker's direction of movement.

- Press the IN button to shift the speakers inward.
- Press the OUT button to shift the speakers outward.
- Press the AUTO button to shift the speakers automatically in accordance with the Panorama Surround mode selected.
  In the CINEMA mode, if the Remote is used to shift the speakers, the Panorama Surround mode will change from CINEMA to another one.

Notes

- *You can apply Panorama Surround modes when you record.*
- *A sound cannot be dubbed with the panorama modes (at either normal or high speeds).*

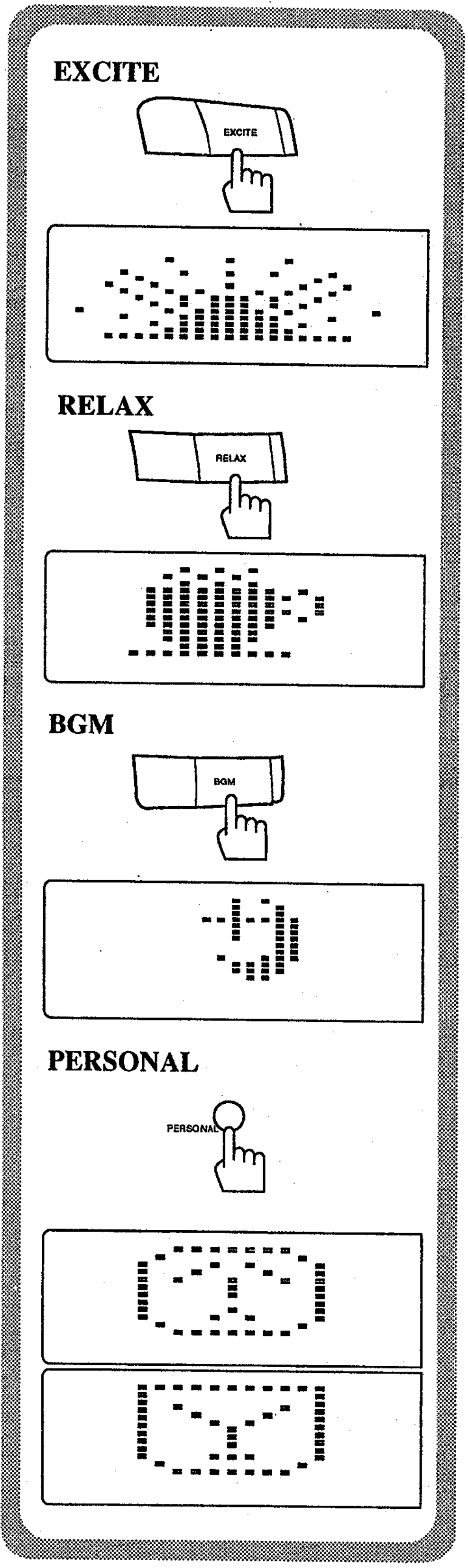
To cancel Panorama Surround mode

You can turn off Panorama Surround mode from either the main Unit or the Remote. Just press the PANORAMA SURROUND button.
ON: the indicator on the main Unit lights up.
OFF: the indicator on the main Unit goes off.

Special Sound Adjustment

Feeling Menu

The Feeling Menu allows you to select one of four special effect sound modes. Selecting a mode will set the respective SEA pattern and panorama shifting speaker angle automatically. The personal mode allows you to store own settings in memory.



EXCITE

Press the EXCITE button.

Regardless of the music source, a sharp, upbeat sound is produced.

RELAX

Press the RELAX button.

A beautiful, subtle sound is obtained. The sound feels like a refreshing breeze which gives a relaxed feeling.

BGM

Press the BGM button.

By controlling the dynamic range, a rich, easy listening sound can be maintained. Low-volume sounds drowned out by larger-volume sounds are boosted and peak sounds are suppressed.

PERSONAL

Press the PERSONAL button so that the stored setting is called up.

Instead of using a preset Panorama Surround mode, you can use the personal mode to create your own customized sound effect. The personal mode settings can be stored in memory.

Note

Do not keep the PERSONAL button pressed to call up the stored setting; otherwise, you may store a new setting rather than calling up the previous one (see below).

To store your own customized Panorama Surround mode into the PERSONAL mode

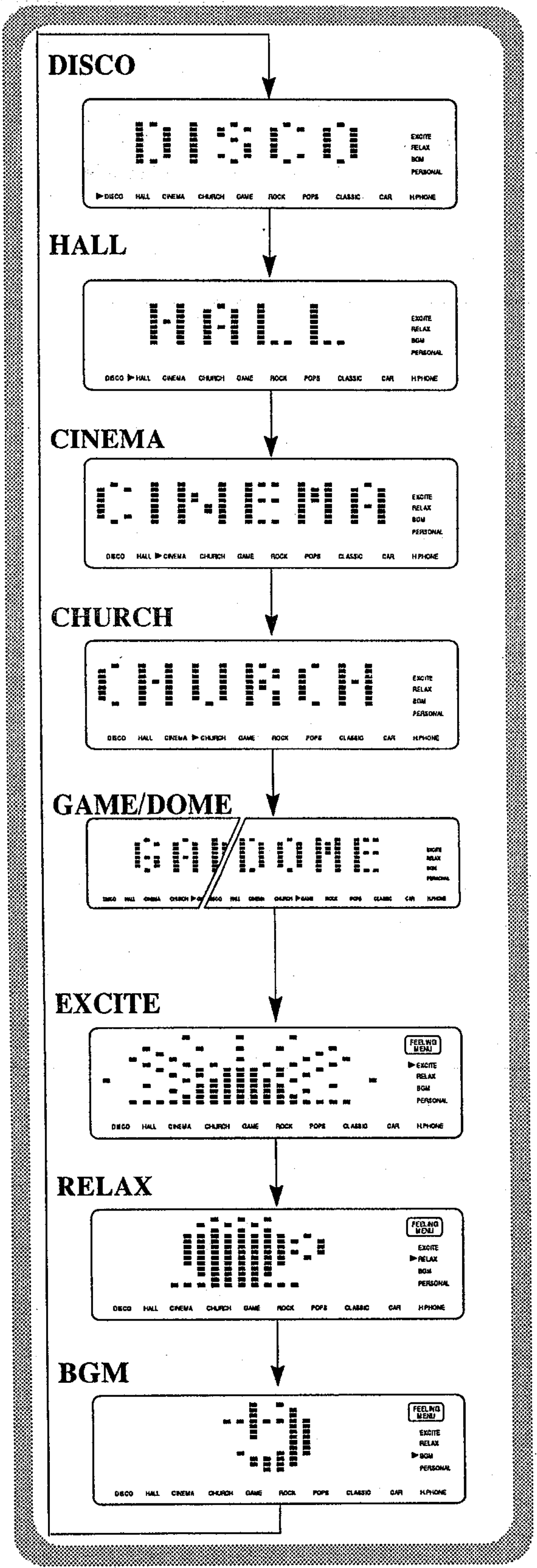
1. Select the panorama mode. (See page 13)
2. Adjust the frequency range.(See page 12)
3. Press and hold the PERSONAL button to store your own pattern.

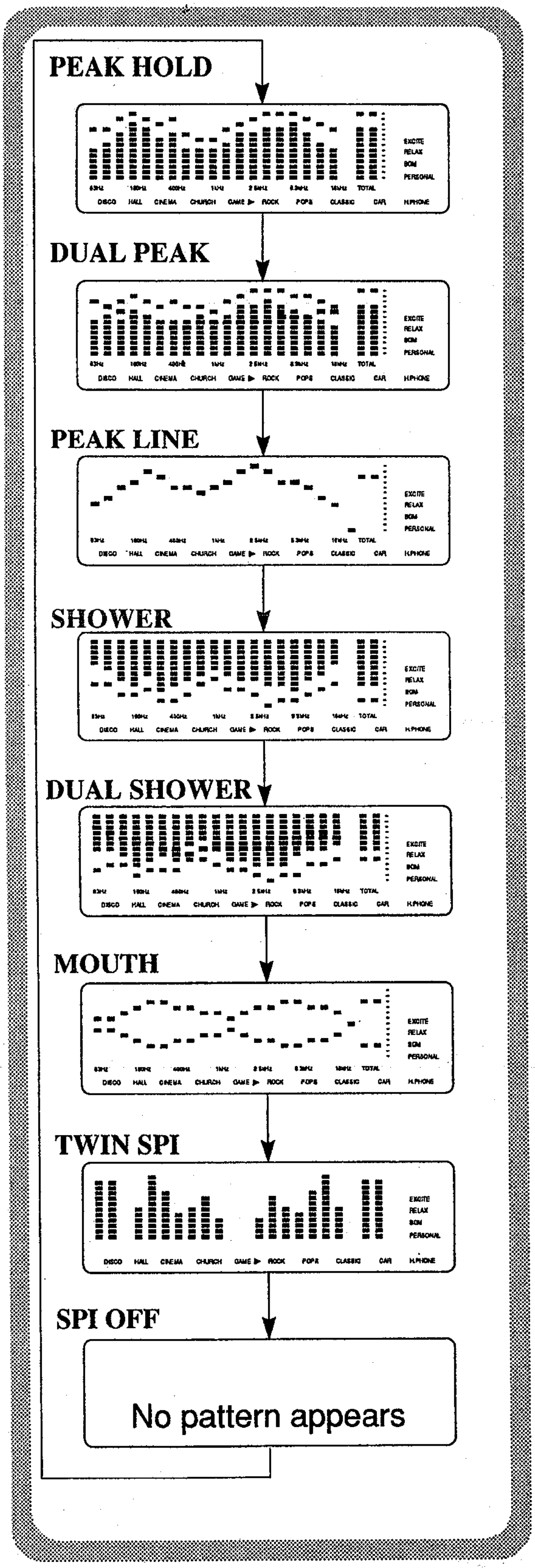
DEMO

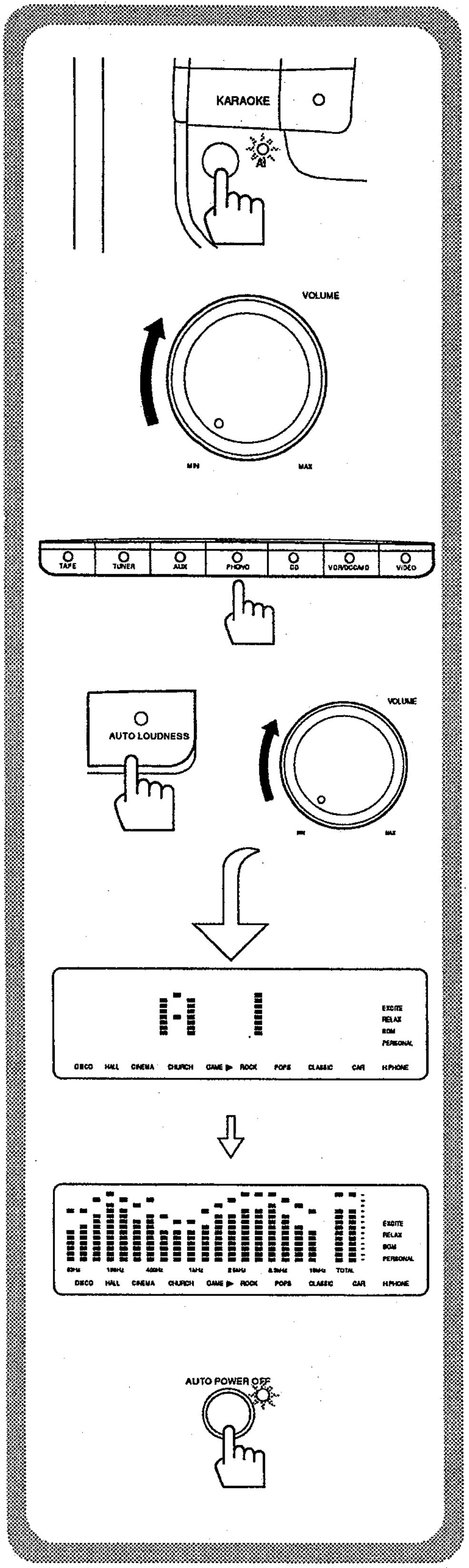
Use the DEMO function to try the various sound modes for a song. During play, press the DEMO button.
8 sound patterns cycle automatically.
To cancel the DEMO function, press the DEMO button again.

DISPLAY

The display shows the status of each frequency band of the sound. During play, press the DISPLAY button. Each time you press the button, the display shows the various sound patterns.
DUAL PEAK and DUAL SHOWER show also the SEA pattern simultaneously.


DISCO
HALL
CINEMA
CHURCH
GAME/DOME
EXCITE
RELAX
BGM


PEAK HOLD
DUAL PEAK
PEAK LINE
SHOWER
DUAL SHOWER
MOUTH
TWIN SPI
SPI OFF
No pattern appears


KARAOKE
AI
VOLUME
MIN
MAX
TAPE
TUNER
AUX
PHONO
CD
VCR/VCC/AUD
VIDEO
AUTO LOUDNESS
VOLUME
EXCITE
RELAX
BGM
PERSONAL
DISCO
HALL
CINEMA
CHURCH
GAME ▶
ROCK
POPS
CLASSIC
CAR
H.PHONE
TOTAL
AUTO POWER OFF

AI (Artificial Intelligence) Function

The CA-MXG7BK has four AI functions; Volume AI, Time Link AI, AUTO LOUDNESS, AUTO POWER OFF, which allow you to set the desired listening environments.

Volume AI

Just by pressing the AI button (the AI indicator lights up). When you turn off the Unit, the VOLUME control is automatically turned down. When you turn on the Unit, the VOLUME control is automatically set to around the most recently used level.

Time Link AI

While the AI indicator is lit, Time Link AI allows you to store the following items into the AI memory automatically. See following example.

- Volume
- Panorama Surround mode
- SEA preset patterns
- Display mode

These four items are stored for each source and for each time range.

** There are four time ranges; 6:00~, 12:00~, 18:00~ and 24:00~.*

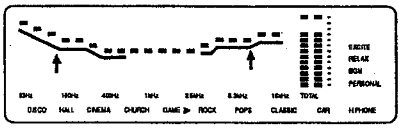
To call up the Time Link AI

1. Press the AI button.
   The LED next to it lights up.
2. Select the sources.

AUTO LOUDNESS

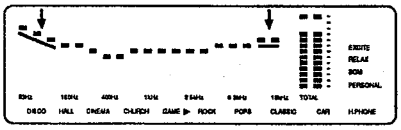
When the AUTO LOUDNESS button is pressed (the indicator on it lights up), the SEA characteristic will change in accordance with the volume level. This means that at low volume, insufficient bass and treble are automatically compensated for, so you can have a full sound at any volume level.

Low volume level


EXCITE
RELAX
BGM
PERSONAL
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME ▶
ROCK
POPS
CLASSIC
CAR
H.PHONE

The bass and treble are automatically increased.

High volume level


EXCITE
RELAX
BGM
PERSONAL
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
DISCO
HALL
CINEMA
CHURCH
GAME ▶
ROCK
POPS
CLASSIC
CAR
H.PHONE

The setting approaches the normal preset pattern.

AUTO POWER OFF

You can fall asleep to music while listening to CD or tape. The CA-MXG7BK will turn off by itself rather than play all night.

Press the AUTO POWER OFF button while listening to CD or tape.

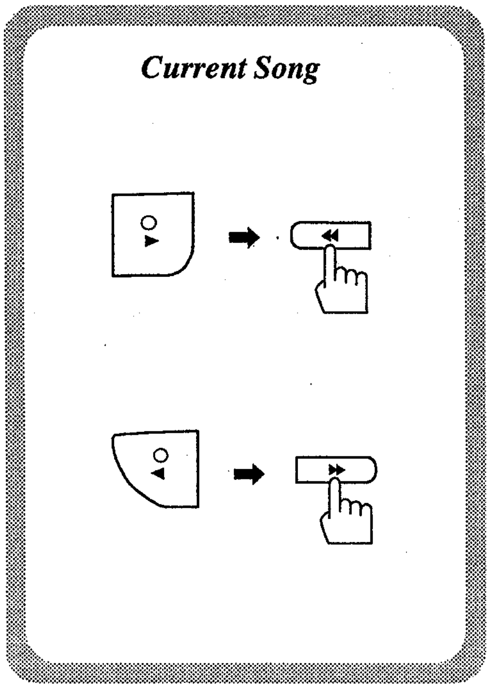
When CD or tape play is over, the Unit will automatically turn off.

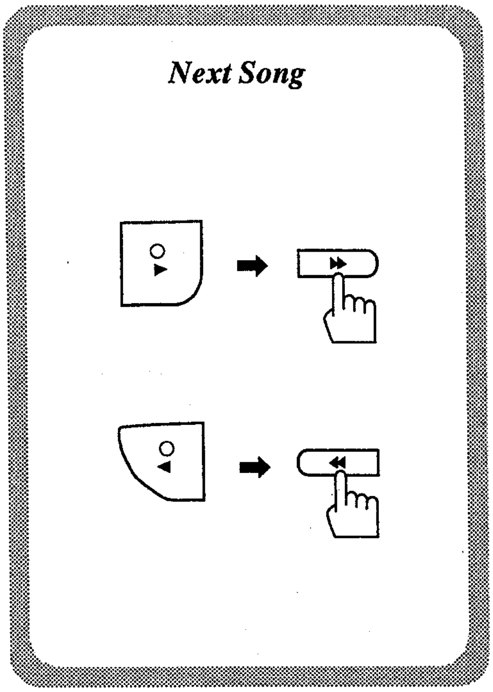
Notes

- *The repeat function of CD player does not work with AUTO POWER OFF.*
- *The Tuner Entry (see page 26) does not work with AUTO POWER OFF.*
- *Ending of tape play depends on the REVERSE MODE setting.*
  Tape play ends either after one side is played or after both sides are played.

Playing Tapes

If there are 4-second or longer blanks between tracks on recorded tapes, you can use the Music Scan feature to find the beginning of a track. (For simple playback procedures, see page 7 of the Easy Guide section.)





Music Scan (Finding Songs)

To find the beginning of a music track use the Music Scan feature. Music Scan searches for blank portions that usually separates tracks, then plays the next track.

Finding the Beginning of the current song

Press the ◀◀ or ▶▶ button during play.

Make sure you press the ◀◀ or ▶▶ button in the opposite direction to tape play. Searching stops automatically at the beginning of the current song, and the current song starts automatically.

Finding the Beginning of the next song

Press the ◀◀ or ▶▶ button during play.

Make sure you press the ◀◀ or ▶▶ button in the same direction to tape play. Searching stops automatically at the beginning of the next song, and the next song starts automatically.

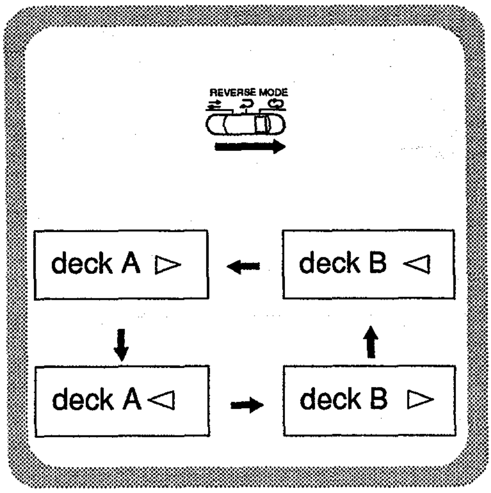
Notes

The Music Scan feature works by detecting a 4 second blank at the beginning of each selection, so it won't work well if your tape has:

- *No blank at the beginning of a track.*
- *Noise (often caused by much used or poor quality dubbing) which fills the blank with noise.*
- *Long very soft passages or pauses in a selection. Music Scan will detect these instead of the 4 second blanks. If this happens, just go ahead with Music Scan again until you reach the selection you want.*

Music Scan only works on one tape at a time.

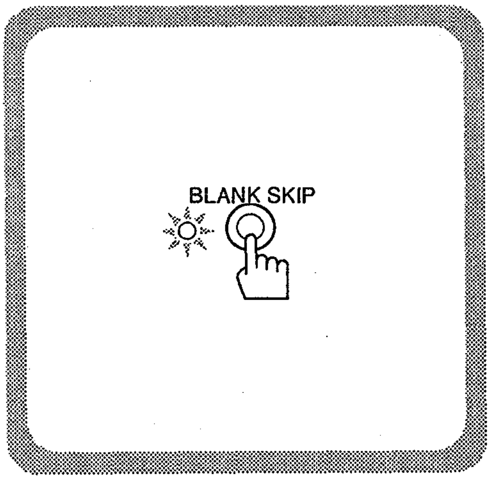
- *If you perform the Music Scan on deck A during recording on deck B, deck B enters recording pause mode.*
- *If you start recording on deck B while Music Scan is performed on deck A, Music Scan is stopped.*



Using Continuous Play

When you play tapes, you can select the side to be played by using the REVERSE MODE selector.

⇄ : only one side is played
⊃ : both sides are played
⇆ : both sides are played repeatedly.
When tapes are in both deck, continuous play follows the sequence at the left regardless where playback starts.
The sequence is repeated endlessly.

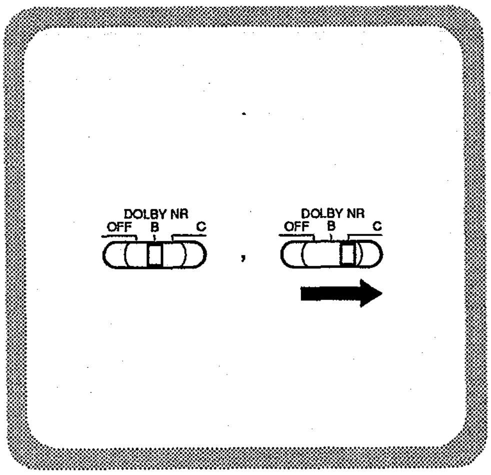


Skipping Blank Portions during Playback

If there is a blank portion of 10 seconds or longer on a tape, the Unit will automatically fast forward, and skip the blank portion, then play back the next track.

Press the BLANK SKIP button before or during play.
The LED next to it lights up.

To cancel the blank skip playback
Press the BLANK SKIP button again.
The LED next to it goes off.



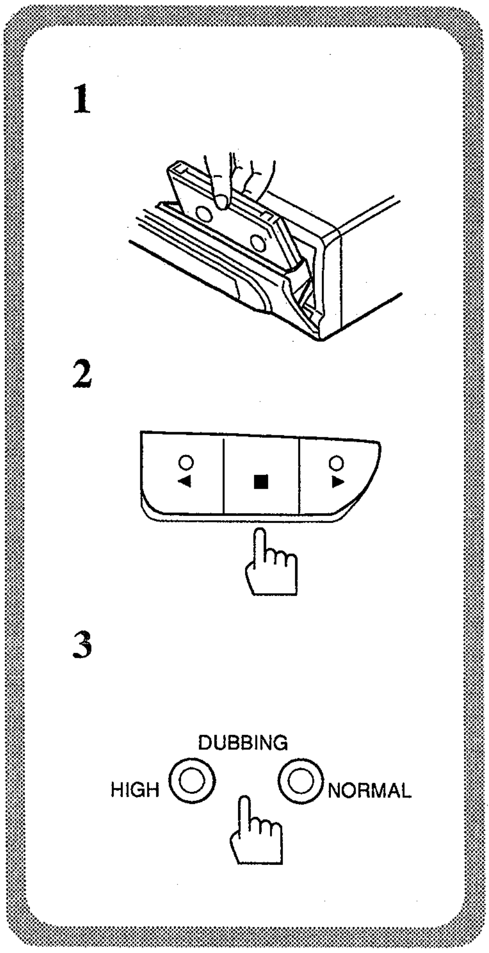
*Using the DOLBY NR * selector*

To play a tape recorded with the Dolby Noise Reduction effect, set the DOLBY NR selector to the same system (B or C) as was used when recording.
If a tape is recorded with the Dolby NR system, playing it back with the same DOLBY NR system will reduce tape hiss and improve the clarity of the sound.

** Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.*
"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

Recording onto Tape

Recording from one tape to another is called dubbing.
You can dub at regular speed for highest quality, or at high speed with a slight loss in sound quality.
With high speed it takes only about one-half the time to copy a tape. For regular recording procedure, see page 8 of the Easy Guide section.



High Speed Dubbing or Normal Speed Dubbing

Although the quality of the dubbed tape is a little less, high speed dubbing is a very convenient way to record from one tape to another.
You can only use deck B to make recordings. Deck A is for playback only.

1. **Put the tape you want to copy *from* into deck A, and the tape to be copied *onto* in deck B.**

2. **On both decks, press either the ◄ or ► button while pressing the ■ button, in order to select the playing and recording side.**

3. **Press either the DUBBING HIGH or the DUBBING NORMAL button.**

Note
During dubbing, you can also listen to another source such as the radio or the CD player, just as if you weren't dubbing.
- *The sound cannot be dubbed with SEA sound patterns and Panorama Surround effect.*
- *During dubbing, when you press the AUTO POWER OFF button, the Unit automatically turns off after dubbing is over.*

To dubb on both sides
Set the REVERSE MODE selector to either ⊃ or ⊂⊃. Dubbing starts from the ▷ front side of both deck A and B.

Recording selections from several different tapes

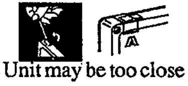
When you want to take selections from several different tapes and combine them on one tape during dubbing, follow these steps:

1 Press the ■ button on deck A.
This causes deck A to stop, so you can change tapes, and deck B makes a 4 second blank and pauses.

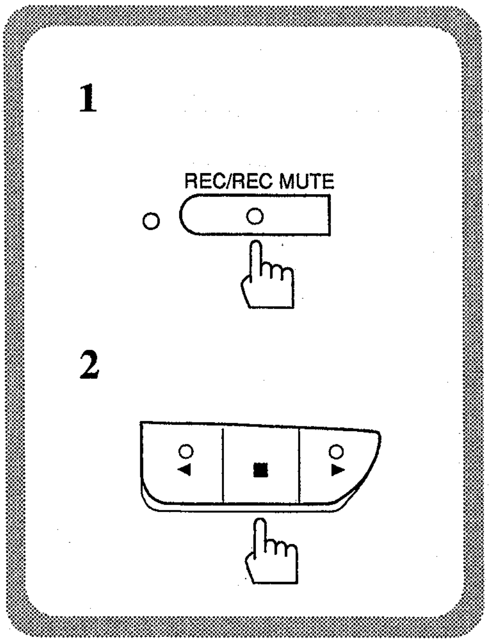
2. Change the tape in deck A.

3. Press either the DUBBING HIGH or NORMAL button (the same one you are using now) to start deck A playing and deck B recording again.

Things to know before start recording
- It may be unlawful to record or playback copyrighted material without the consent of the copyright owner.
- Cassettes have a special feature so you won't accidentally record over a tape you want to save. Two small tabs on the back, one for side A and one for side B, can be removed to prevent erasure or re-recording. To record on a cassette with the tabs removed, you must cover the holes with tape first. However, when a Type II tape is used, only cover part of the hole as shown below, since the other part of the hole is used to detect the tape type.



- Type I, II and type IV tapes can be used for recording.
- If recordings you make have excessive noise or static, the Unit may be too close to a TV which was on during the recording. Either turn off the TV or increase the distance between the TV and the CA-MXG7BK.



Making a 4-second Blank on a Recorded Tape

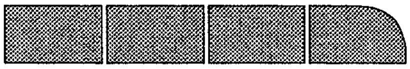
1. **Press the REC/REC MUTE ○ button during play.**
The LED next to it blinks for 4 seconds and deck B enters recording pause mode.

To make a blank portion longer than 4 seconds, keep the button pressed for the length of time you want the blank to be.
When the button is released, deck B enters recording pause mode.

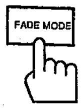
2. **Press the ◄ or ► button to restart recording.**

FADE

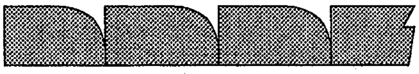
1st track



NONSTOP

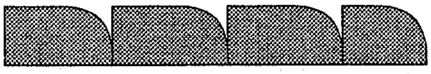


1st track



FADE NONSTOP

1st track



Recording from CD - Fuzzy CD Recording

Since the CA-MXG7BK provides 3 types of Fade modes and 4 types of CD Editing modes, you can make a variety of CD recordings by combining these 7 modes.

Using the Fade Mode

There are 3 types of Fade mode; FADE, NONSTOP, FADE NONSTOP (a combination of NONSTOP and FADE).
Each time you press the FADE MODE button, the Fade mode changes in the following sequence:

FADE→NONSTOP→FADE,NONSTOP→OFF

(You will see these changes in the CD display window)

FADE : At the end of the tape, the CA-MXG7BK automatically goes back to the beginning of the last selection and re-records it, this time gently fading out at the end.

- If you have set the Reverse Mode to ⊃ or ⊂⊃ , side B starts recording at the beginning of the last track on side A. So you get the whole selection, even though part of it was cut off when the tape ran out on side A.

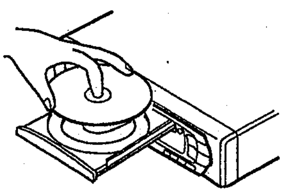
NONSTOP: Every track ends by fading out, and the next track starts as soon as fading-out is over. Thus, you can make a tape with no blank portions between selections. At the end of the tape, however, this mode does not make the end of the track fade out, if the selection is cut off when the tape runs out.

FADE
NONSTOP: Using this mode you can record the entire tape without any blanks. Every track ends by fading out, and at the end of the tape, the last selection fades out instead of cutting off abruptly when the tape runs out, just like FADE.

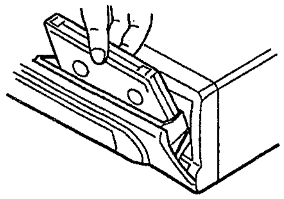
- If you have set the REVERSE MODE to ⊃ or ⊂⊃, side B starts recording at the beginning of the last track on side A.

Note
NONSTOP and FADE/NONSTOP modes cannot be used with the MULTI EDIT mode (see page 22).

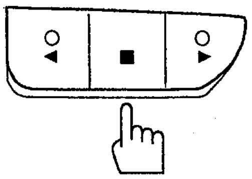
1



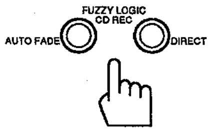
2



3



4



What is Fuzzy CD Recording?

If the recording level is too high, distortion will result. On the other hand, if the recording level is too low, the sound volume will be low. So, it is very important to check the peak level of the source tracks before recording. Furthermore, it is necessary to check the tracks' overall level. With the Fuzzy CD Recording feature, if the tracks' overall level is high, the recording level will be set lower, and, if the tracks' overall level is low, the recording level will be set higher. In this way, the optimum recording level is set according to the sound inclination of the tracks as well as the peak level. The conventional peak search function does not take into account the tracks' overall balance when setting the recording level; therefore, the recording level tended to be low. Fuzzy CD Recording gives a balanced recording level which matches different kinds of tracks.

Fuzzy CD Recording

1. **Load a CD in the tray.**

2. **Put a tape in deck B.**

3. **Select the side to record on, by pressing either the ◄ or ► button while pressing the ■ button on deck B.**

4. **Press either FUZZY LOGIC CD REC AUTO FADE or DIRECT button.**
   The tape starts recording 10 seconds before the CD starts, making a 10 second blank at the beginning of the tape to insure the entire selection is recorded.

- If the last recorded track cannot fit on side A, it will be re-recorded with fade-out.
- When REVERSE MODE is set to either ⊃ or ⊂⊃, side B recording will start after a blank portion of 10 seconds is made. The recording will continue with the last track recorded with a fade-out on side A.
- The last track on side B will end by fading-out.
- If the inserted tape has not been rewound, it will be rewound automatically before recording begins.

To stop recording

Press the ■ button on deck B or the STOP/CLEAR ■ button on the CD player.

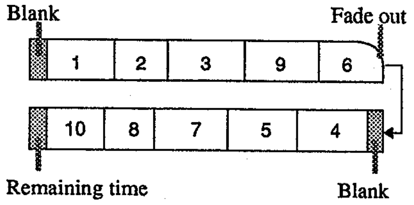
Note
The tracks can be recorded with the desired sound effect (SEA patterns and Panorama modes).
Sound effects cannot be changed during recording.

AUTO FADE starts the recording with AI Edit (page 22) and Fade mode (page 20).
- When FUZZY LOGIC CD REC (either AUTO FADE or DIRECT) is pressed, the optimum recording level will be determined by the fuzzy search, then the recording will start from the first CD track. (Since the fuzzy search will search the entire CD, it will take a little time.)
- During the fuzzy search, the track number, number of tracks, playing time, etc., will change accordingly.

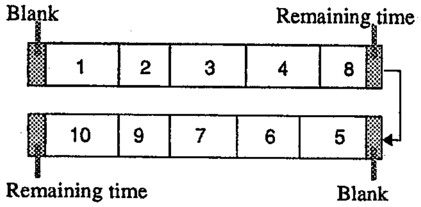
Using CD Edit Mode

The CA-MXG7BK has four CD Edit modes; AI EDIT, Auto Edit, Program Edit and Multi-Edit. To take advantage of these Edit modes, read the following instructions carefully.

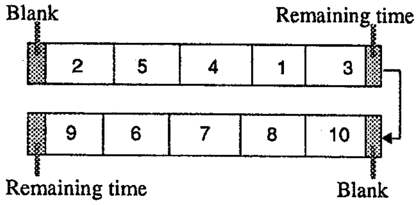
AI Edit


Blank
Fade out
1
2
3
9
6
10
8
7
5
4
Remaining time
Blank

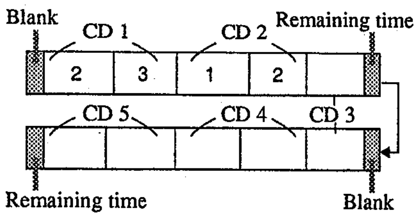
Auto Edit


Blank
Remaining time
1
2
3
4
8
10
9
7
6
5
Remaining time
Blank

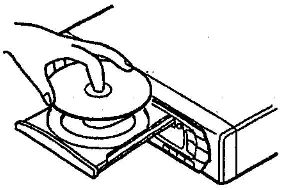
PRGM Edit


Blank
Remaining time
2
5
4
1
3
9
6
7
8
10
Remaining time
Blank

Multi Edit

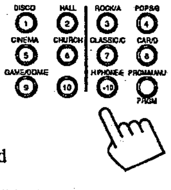

Blank
CD 1
CD 2
Remaining time
2
3
1
2
CD 5
CD 4
CD 3
Remaining time
Blank

1



2

3


DISCO
HALL
ROCK/A
POPS
1
2
3
4
CINEMA
CHURCH
CLASSIC
CAR
5
6
7
8
GAME/DOME
H.PHONE
PRGM
9
10
+10
PRGM

to be continued

What is AI Edit?

This is an editing function which complements the Auto Edit mode. You can use it to maximize the use of the remaining tape length. When the tape comes to its end, the FADE mode will function automatically. Up to 16 tracks can be edited for one side.

What is Auto Edit?

To prevent the beginning of the track from not being recorded, the last track will be replaced automatically in accordance with the remaining tape length. The editing will start with the earlier tracks and the tracks will be selected so they can fit on the tape. No track is selected twice. However, depending on the remaining time, the same track may be selected twice to fill in the recording time at the end of the tape. After up to 16 tracks are edited, the editing procedure will stop.

What is PRGM(program) Edit?

Using this mode you can select which CD tracks go on which side of the tape, and in what order.

What is Multi Edit?

Using this mode you can select tracks from several different CDs. The NONSTOP and FADE NONSTOP modes cannot be used with Multi Edit mode.

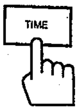
Operating procedures

1. **Load a CD in the tray.**

2. **Press the EDIT MODE button to select the EDIT mode you want to use.**
   Each time you press the button the indicator is displayed as follows in the CD display window:

   → AI → AUTO → PRGM → MULTI → OFF

3. **Press the TIME button to set the time duration.**
   Each time you press the button, the pre-programmed tape length is shown on the display as follows:

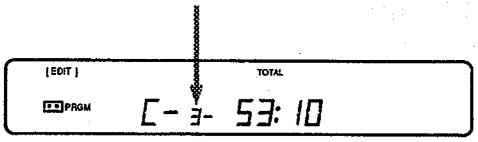


→ 40 → 46 → 50 → 54 → 60
90 ← 80 ← 74 ← 70 ← 64 ←

If you want to use the Remote, you can set the tape duration by using the +10 button and 10 keys. (Make sure that the TUNER/CD/PANORAMA SEA is set to the CD position.)

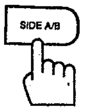
ex. C-30: +10, +10, 10.
C-46: +10, +10, +10, +10, 6.
C-74: +10, +10, +10, +10.....Press the +10 button seven times, then press 4 button.

This number shows the how many times you have pressed the +10 button.

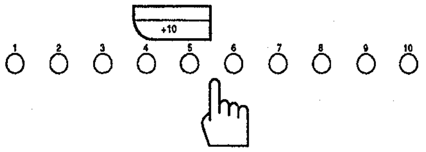

[EDIT]
TOTAL
PRGM
C- 3- 53: 10

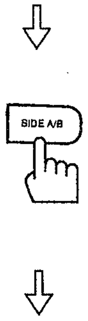
to be continued

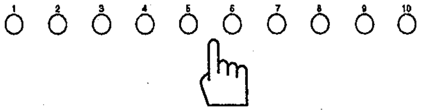
AI Edit or Auto Edit



PRGM Edit or Multi Edit







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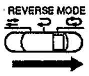

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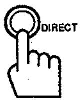


When you have selected the AI Edit or Auto Edit

Press the SIDE A/B button

The tracks which can fit on side A and B will be automatically selected in accordance with the specified tape length. By repeatedly pressing the SIDE A/B button you can check which tracks have been programmed for which side of the tape.

When you have selected the PRGM Edit or Multi Edit

Select the track numbers for side A with 10 keys.

When you have selected the Multi Edit, you can select tracks from different discs. After you have selected tracks from one disc, replace it with the next disc, then select tracks you want.

Press the SIDE A/B button.

Select the track number for side B.

When you have selected the Multi Edit you can change discs, and select up to 10 tracks from one disc.

4. **Put a tape in deck B and set the REVERSE MODE selector to the ⊂⊃ position.**

5. **Press the FUZZY LOGIC CD REC DIRECT button.**

   After a blank of 10 seconds is made at the beginning of the tape, the CA-MXG7BK stores your setting in memory, then the recording will start. If the inserted tape has not been rewound, it will be rewound automatically before the recording begins.

   (Only for the Multi Edit mode)

   When the first disc play ends, deck B enters recording pause mode. Change the disc and press the FUZZY LOGIC CD REC DIRECT button, and repeat this procedure until all the programmed discs are played.

To stop the recording

Press the STOP/CLEAR ■ button.

Notes on the PRGM Edit and Multi Edit

To delete the last selected track

Press the CANCEL button on the CD section in stop mode. Each time you press the button, the last selection will be deleted.

When using the Multi Edit, you can only delete the last selected track of the disc loaded on the tray. To delete the last selected track of another disc, change the disc and press the CANCEL button.

Receiving Radio Broadcasts

The controls for the radio are located in the Tuner/Amplifier section. With these controls you can browse through all the stations or use the preset function to go immediately to a particular station. For tuning stations manually, see page 8 of the Easy Guide section.

Using the Bandwidth Memory

Storing Preset Stations

Once a station is assigned to a channel number, the station can be quickly tuned either from the Remote using the 10 keys or from the CA-MXG7BK itself using the PRESET < or > button to call up the channel number.

To preset radio stations

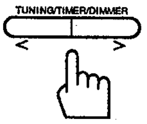
1. **Tune in the station you want to set (see page 8 in the Easy Guide section).**
2. **Press the MEMORY button.**
   On the Tuner/Amplifier display, MEMORY will blink for 5 seconds. During these 5 seconds while MEMORY is blinking you can assign a channel number to the station and enter it into the memory.
3. **Select a channel number by pressing the PRESET < or > button until you find the channel number you want.**
   If you select a number you have already assigned, the previous selection will be erased and replaced by the new station.
4. **Press the MEMORY button again and the station will be assigned to the channel number showing on the display.**
   You can preset 10 AM and 10 FM stations.

To cancel presetting

Press the CANCEL button.
On the display, CANCEL will blink for 5 seconds. During these 5 seconds for which CANCEL is blinking, you can select the station you want to erase. Press the CANCEL button again.

CAUTION: Preset stations may be erased when power is cut off to the Unit, as when it is unplugged from the AC outlet or a power failure occurs. If the preset stations are lost, simply set the stations again using the above procedure.

1



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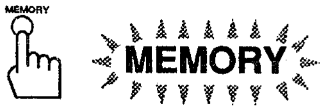

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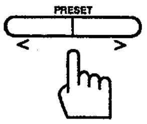

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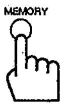
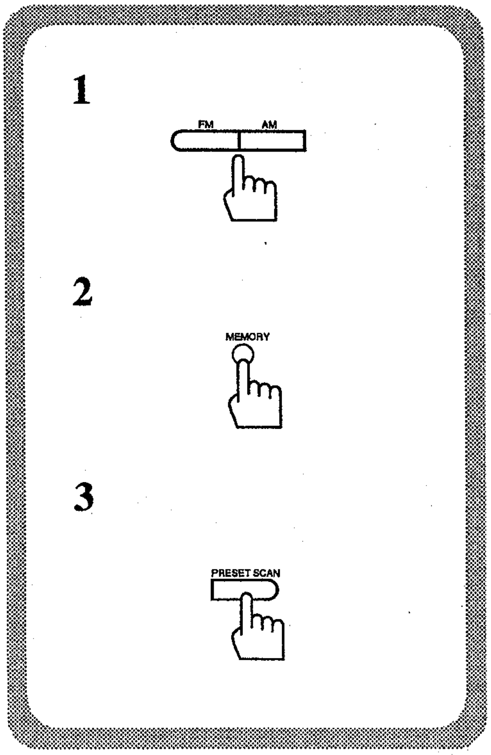


Using Auto Preset Function


1
FM
AM
2
MEMORY
3
PRESET SCAN

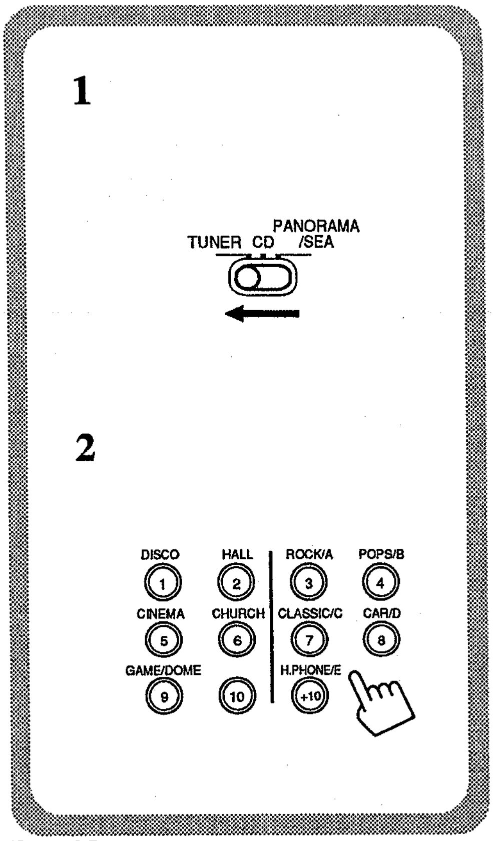
The CA-MXG7BK will automatically preset AM or FM stations.

1. **Press the FM or AM button.**

2. **Press the MEMORY button.**
   On the display MEMORY will blink for 5 seconds. During these 5 seconds for which MEMORY is blinking you can use the Auto Preset mode.

3. **Press the PRESET SCAN button.**
   Regardless of whether FM or AM is selected, the automatic search will start with the FM stations. After the FM preset operation is completed, the AM preset operation will begin. Up to 10 stations each for the FM and AM bands can be preset.
   When a station is found, it will be received for about 5 seconds. If you do not want to preset the station, press the PRESET SCAN button again while receiving the station and the station will be skipped.

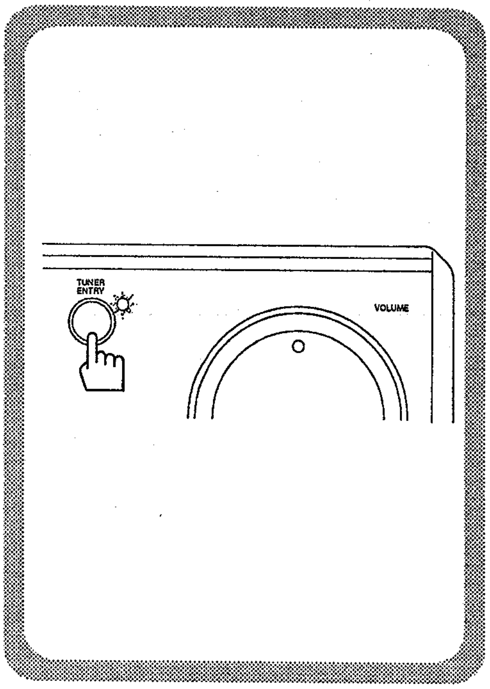
Tuning in a Preset Station


1
PANORAMA
TUNER CD /SEA
2
DISCO
HALL
ROCK/A
POPS/B
1
2
3
4
CINEMA
CHURCH
CLASSIC/C
CAR/D
5
6
7
8
GAME/DOME
H.PHONE/E
9
10
+10

The Remote is very useful for this because you can select channels by number using the 10 keys.

1. **Set the TUNER/ CD/ PANORAMA SEA selector to the TUNER position.**

2. **Press the 10 keys to select the channel you want.**
   - You can also tune in the stations by using the PRESET< or> button on the main Unit. Each time you press the PRESET < or > button, the channel increases or decreases by one. If you hold the button down, the tuner will cycle through the stations one after another.

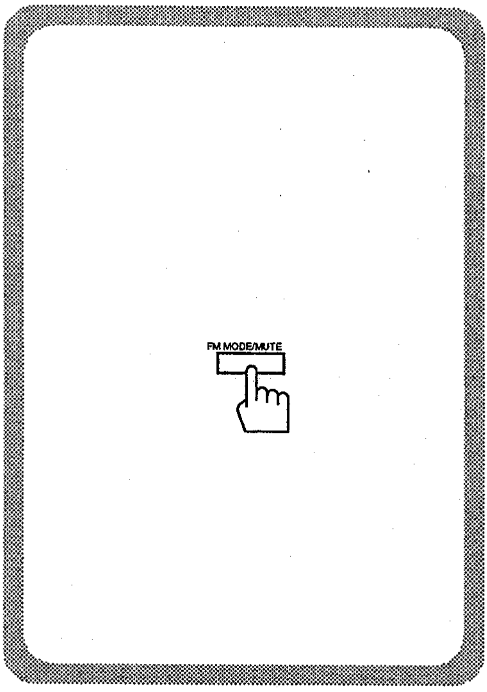


Using the Tuner Entry Function

When the CD or tape playback ends, the source will automatically switch to TUNER. Your listening enjoyment will thereby not be interrupted. So with Tuner Entry on, the Unit automatically shifts to the most recently tuned radio station when a tape or CD comes to an end.

Press the TUNER ENTRY button.
The LED next to it lights up when Tuner Entry is on and is off when Tuner Entry is off.
When the CD or tape playback ends, the source will switch to the most recently tuned radio station tuned.
Note
In five situations even if Tuner Entry is on, it will not take effect, and the source will not switch to TUNER after the CD or tape playback ends.

1) When you intentionally stop the CD or tape deck by pressing the STOP/CLEAR ■ button on the CD player or the ■ button on the tape deck.
2) When any timer activated CD or tape stops playing.
3) When you set the REVERSE MODE to the ⊂⊃ position.
4) When you set REPEAT or REPEAT 1 playing.
5) When you set AUTO POWER OFF.



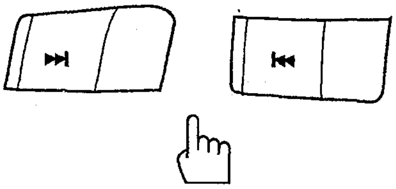
Selecting the FM Tuning Mode

When an FM stereo broadcast is hard to receive or noisy:
Press the FM MODE/MUTE button on the main Unit so that reception improves, although you lose the stereo effect. In this state, you will hear noise while tuning into stations. MONO lights up on the display.

To restore stereo effect
Press the FM MODE/MUTE button again so that AUTO appears on the display.
In this state, when a program is broadcast in stereo, you will hear stereo sound; when in monaural, you will hear monaural sounds. In this state, you won't hear noise while tuning into stations.

Playing CDs

You can use various function such as Auto Search, Programmed Play, Random Play, and the Repeat Function.



Locating a Particular Track or a Particular Portion of theTrack

Finding a Track You Want

Each time you press briefly and release the ⏮ or ⏭ button, the track changes by one.

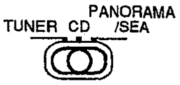
- Press and release the ⏭ button to go ahead one track at a time.
- Press and release the ⏮ button to go back one track at a time.
- With the Remote, holding the ⏮ or ⏭ button will change the tracks continuously.

- Although fast forward and fast reverse are not usable when the CD is off, the track change function is available, so you can select the track you want to start playing when you start the CD. The track number is shown on the display.

Finding a Particular Point You Want

Holding down the ⏮ or ⏭ button on the main Unit will fast forward or fast reverse the CD so you can quickly find the particular portion of a track you want to listen to.

1



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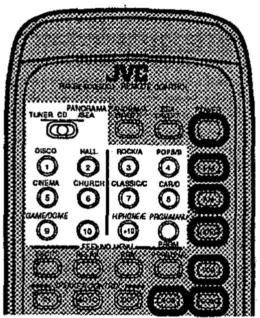


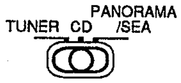
Locating a Track with the Remote Directly

Using the 10 keys on the Remote allows you to go directly to the beginning of any track.

1. **Set the TUNER/ CD/ PANORAMA SEA selector to the CD position.**
2. **Enter the number of the track you want using the 10 keys.**

- Example: for track 5, press 5. For track 15, press +10 then 5. For track 20, press +10, then 10.

1



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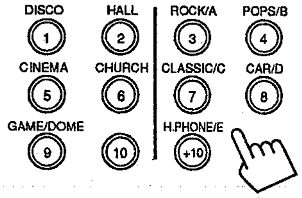


4

Using Programmed Play

In addition to the high quality sound which makes the CD such a good way to listen to music, you can change the order in which the tracks play. You can arrange the tracks to play in any order you like with the Program function. The Remote is very useful for this because you can select tracks by number with the 10 keys.

To program the CD track order from the Remote

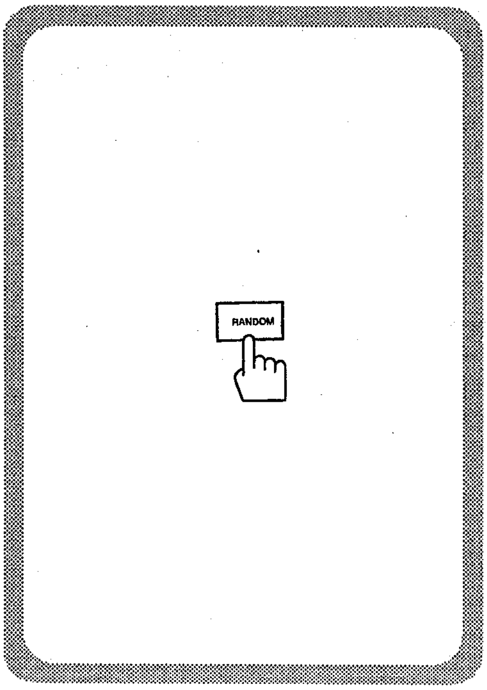
1. **Set the TUNER /CD /PANORAMA SEA selector to the CD position.**
2. **Press the PRGM button. PROGRAM lights in the CD display window.**
3. **Press the 10 keys to select the track numbers you want.**
   Your program can include up to 32 tracks, and you can repeat tracks if you wish.
4. **Press the ▷ button on the CD CONTROL section of the Remote to start the program.**
   The first track you programmed will start to play.

To stop the CD during Programmed Play

Press the □ button. To cancel the program, press the PRGM or the PROGRAM button on the main Unit.

A Few Hints to Make Programming Easier

- If you want to change the number of a track you just entered, press CANCEL on the main Unit, and enter another number.
- If you want to change the entire program, press the STOP/CLEAR ■ button on the main Unit twice, and then you can start over.
- To view the order of the tracks in your program when it's playing, press the □ button, then press the ⏮ or ⏭ on the CD CONTROL section of the Remote to display the order of the tracks. Each time you press the ⏭ button the next selection in your program is displayed. (Press the ⏮ button for the previous selections.)
- To add a track to your program during play, press the 10 keys on the Remote. Any tracks you add will appear at the end of the current program.

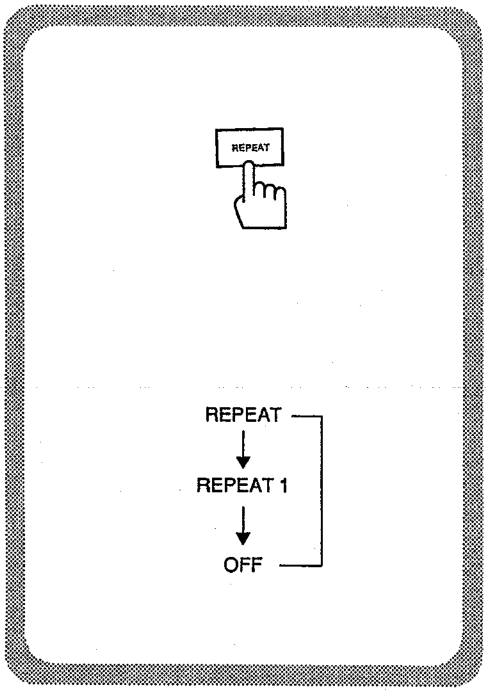


Using Random Play

Since the microcomputer will determine the order of the tracks to be played, you will be pleasantly surprised by the next track played.
Before starting a CD, press the RANDOM button. RANDOM lights up and the ► indicator blinks on the display.

- When all of the tracks have been played, random play will stop.

To stop and cancel the Random Play
Press the STOP/CLEAR ■ button.



Using the Repeat Function

You can have either the program or the individual selection currently playing repeat as many times as you like.
Each time you press the REPEAT button, it cycles from OFF, which turns the REPEAT indication out on the display, to REPEAT which will repeat all tracks in order or according to the program you have set, and REPEAT 1 which will repeat the currently playing track.

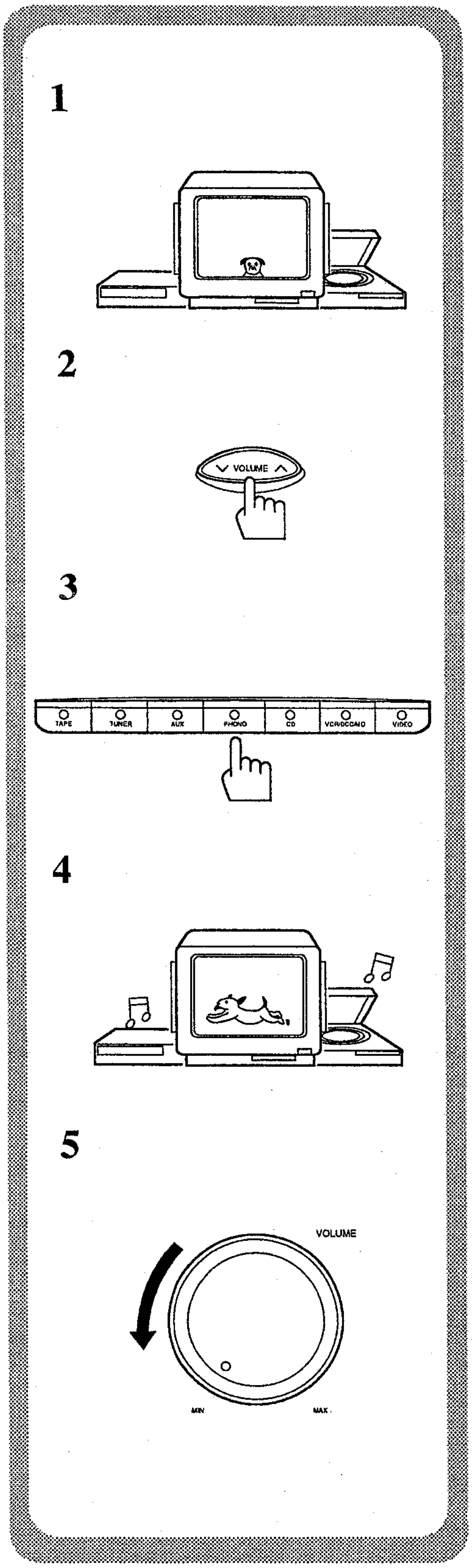
To cancel Repeat
Just press the REPEAT button until the REPEAT indication on the display goes off.

Note
Repeat Play can be used with Program Play or Random Play.

- *With Program Play, the program you made is repeated.*
- *With Random Play, all the tracks on the CD are repeated in a different order each time.*

Listening to a VCR , Record Player or other Equipment through Your CA-MXG7BK

By playing a VCR, Record Player or other connected equipment through the CA-MXG7BK, you can often dramatically improve the sound quality, as well as gain control over how the music or program sounds. Once the connected equipment is playing through the CA-MXG7BK, you can apply the sound effects, make recordings, or listen with the headphones. Here are the steps to take:



1. **Make a connection between the VCR, Record Player or other equipment as shown on page 4.**
   - Since there are many different types of VCRs and Record Players, etc., we can't tell you here just how to make the connections on the other equipment. However, the diagrams on page 4 will cover most cases, and you can also look in the instruction manual for the other equipment you have.

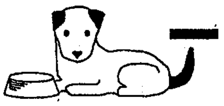
2. **Set the Unit's volume to its lowest setting. Use < VOLUME > on the Remote, or turn the VOLUME control all the way counterclockwise.**

3. **Select the connected equipment with the source selecting button.**

4. **Switch on the connected equipment and start it playing.**

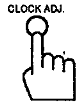
5. **Adjust the VOLUME to a proper listening level.**

Using the Timers



The timers let you control recording and playing functions automatically.
Recording Timer—Unattended recording of radio broadcasts. You can set the starting time and recording duration.
Wake up Timer/Sleep Timer—Wake up to music from any source. Fall asleep and have your CA-MXG7BK turn off automatically after a certain length of time.
ONCE/DAILY Timer—You can program the Unit to come on playing a source at a particular time, and then shut off at a special time.

1



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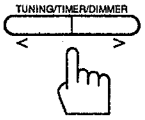

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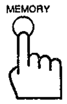

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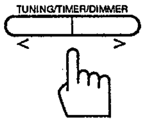

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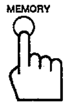

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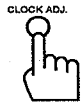


Setting the Clock

The timers depend on the clock: If the clock is right, the timers will work like you expect, but if the time is incorrect on the clock then the timers will also be incorrect.

Special Notice: The clock must be set, or the timers cannot be set!
So, let's set the clock first.

1. **Press the CLOCK ADJ. button.**

2. **Set the hour by pressing the TUNING/TIMER/DIMMER< or > button.**
   Each time you press it, the hour advances by one. Hold the button down, and the clock will advance one hour at a time as long as the TUNING/TIMER/DIMMER< or > button is held down.

3. **Press the MEMORY button, when the correct hour is showing on the display.**
   The hour is set.

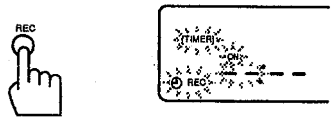
4. **Set the minutes by pressing the TUNING/TIMER/DIMMER< or > button.**
   Each time you press it the minutes advance by one. Hold the button down, and the minutes advance in 10 minute increments .

5. **Press the MEMORY button.**
   The minute is set.

6. **Press the CLOCK ADJ. button again and the clock is set and starts from zero second.**

If the clock has not been set or if there has been a power outrage, "0:00" will be displayed and "CLOCK" will blink. If there is a power failure, the clock looses its setting, the display shows "0:00," and it must be reset.
You can set the clock and the Timers whenever the CA-MXG7BK is turned off, but still connected to a live power source.

1



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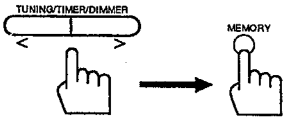

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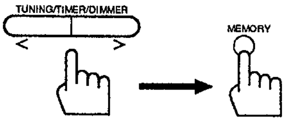

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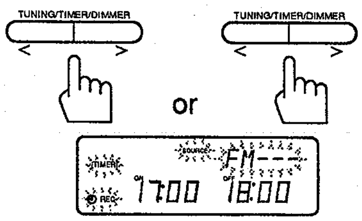

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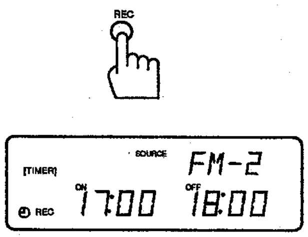

Setting the Recording Timer

With the recording timer you can make a tape of a radio broadcast automatically whether or not you are there to start the CA-MXG7BK. For the timer to work correctly, you need to make sure of two things in addition to setting the time for the radio and tape deck to come on:

- A long enough tape must be in deck B.
- The clock must be set to the correct time.

1. **Press the REC button.**
   As long as the indicator is flashing, you can continue with the setting process. If you wait too long, and it stops before you are done, just press the REC button twice and start over.

2. **Set the time you want the radio to come on and the tape in deck B to start recording.**
   Use the TUNING/TIMER/DIMMER < or > button and the MEMORY button just like setting the clock. (See page 31)

3. **Set the time you want the radio and deck B to shut off.**
   Use the TUNING/TIMER/DIMMER < or > button and MEMORY button just like setting the clock. (See page 31)

4. **Press the TUNING/TIMER/DIMMER < or > button to select an FM or AM station, and then press the PRESET < or > button to select the preset channels.**
   At the end of the set length of time the radio and deck B will shut off.

5. **Press the REC button again.**
   The Unit will memorize the setting.
   When the recording timer switches the CA-MXG7BK on, the VOLUME control will automatically set to MIN.
   Notice that the REC indicator is lighted up on the display whenever the Recording Timer is set.

If you do not want the timer to operate but want to keep the setting
Press the REC button so that the REC indicator on the display goes off.

To reactivate the timer
Press the REC button again.

It is very easy, and can be very disappointing, to forget to put in a tape, or to accidentally leave a tape in deck B you don't want recorded over. Although this happens to almost everyone sometimes, we hope it won't happen to you!

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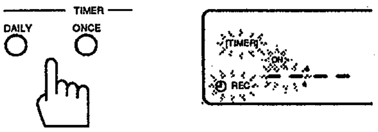

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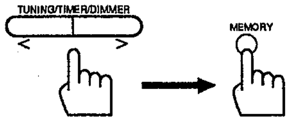


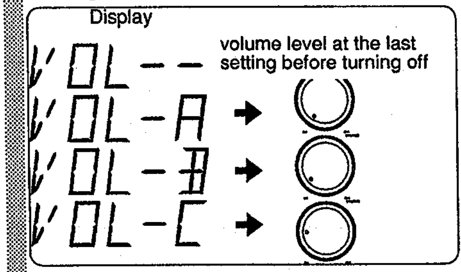
3

Setting the Source

Indicator	Source played
FM	FM
AM	AM
CD	CD
TAPE	TAPE
-----	the most recently used source

4

Setting the volume



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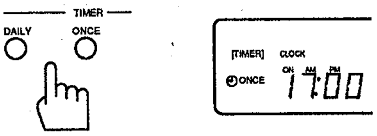
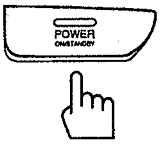


6



Setting ONCE/DAILY Timer

ONCE Timer works only once.
DAILY Timer executes the timer operation at the same time everyday.

1. **Press the ONCE or DAILY button which you want to set.**
   The timer (ONCE or DAILY) indicator (whichever you choose) blinks on the display.

2. **Press the TUNING/TIMER/DIMMER< or > button to set the start time and the stop time.**
   Use the TUNING/TIMER/DIMMER < or > button and MEMORY button just like setting the clock. (See page 31)

3. **Press the TUNING/TIMER/DIMMER < or > button to select the source, and then press the MEMORY button.**
   Each time you press it the display will cycle from one source to the next. When the source you want is showing, press the MEMORY button. The Unit will memorize the setting.

- When FM or AM is selected
  You need to select a preset station by using the PRESET < or > button.
- When CD is selected
  You can designate the first track to play from the first 10 tracks on the CD.

4. **Press the TUNING/TIMER/DIMMER < or > button to set the volume, then press the MEMORY button.**
   Each time you press it the display shows the volume setting cycles as the table on the left. When you press the MEMORY button, the Unit will memorize the setting.

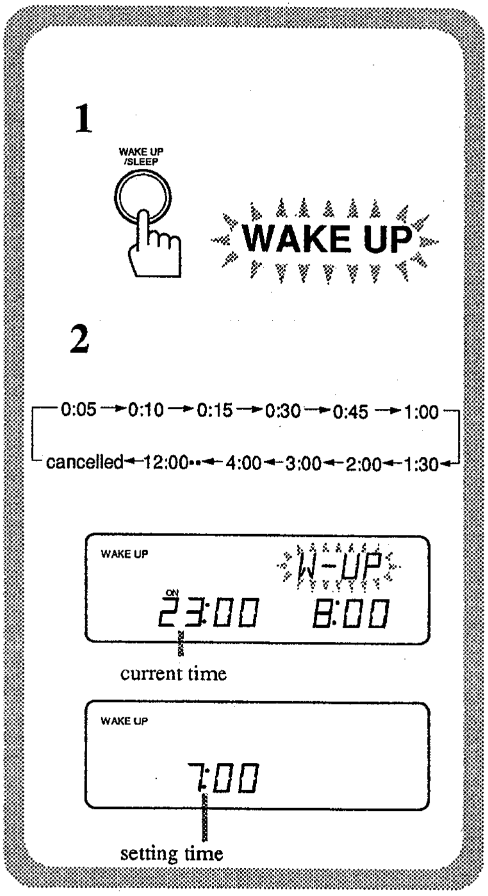
5. **Press the ONCE or DAILY button.**
   The timer indicator you have selected remains lit on the display and shows you the timer is set.

6. **Press the POWER button to turn the Unit off.**

If you do not want the timer to operate but want to keep the setting
Press the ONCE and/or DAILY button so that the ONCE and/or DAILY indicator disappears from the display.

To reactivate the timer.
Press the ONCE and/or DAILY button again so that the ONCE and/or DAILY indicator lights up.

Note
When the timer-on time comes, the VOLUME control gradually turns up to the set position. For example, if your set position is VOL-B, the VOLUME control first turns up to and stays at the VOL-A position briefly, then turns up to the VOL-B position.


1
WAKE UP /SLEEP
WAKE UP
2
0:05 → 0:10 → 0:15 → 0:30 → 0:45 → 1:00
cancelled ← 12:00 ·· ← 4:00 ← 3:00 ← 2:00 ← 1:30
WAKE UP
W-UP
ON
23:00 8:00
current time
WAKE UP
7:00
setting time

WAKE UP Timer

With this timer you can wake up to music from a CD, tape or your favorite radio program.

- The WAKE UP Timer can only be set when the Unit is turned off.

1. **Press the WAKE UP/SLEEP button with the CA-MXG7BK off.**
   The WAKE UP indicator on the display will start blinking.

2. **Set the time you want the Unit to turn on.**
   Each time you press theWAKE UP/SLEEP button, it changes the time shown on the display in the sequence shown at left and is added to the current time.

After selecting the time,wait about 5 seconds, and the CA-MXG7BK memorizes your setting.

- The WAKE UP timer indicator remains lit on the display to let you know that the WAKE UP timer is set.

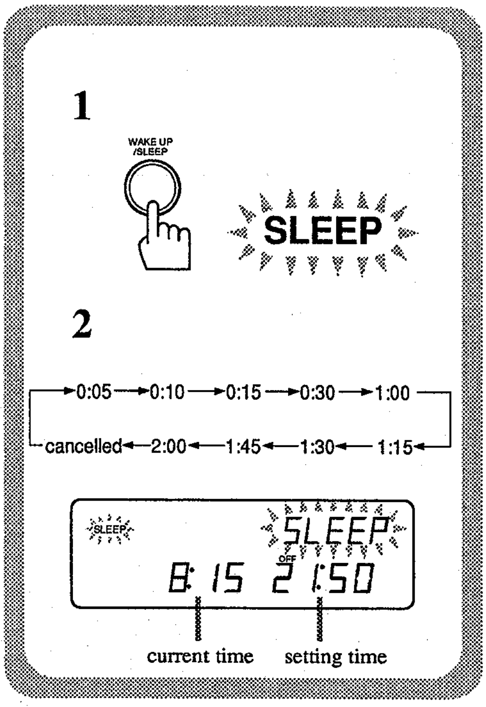
To cancel the WAKE UP timer setting
Press the POWER button, and the WAKE UP timer indicator on the display will turn off.

To check the time remaining until the Unit turns on
Press the WAKE UP/SLEEP button once.
The remaining time will be displayed for 5 seconds.

To change the set time
Press the WAKE UP/SLEEP button repeatedly.

Hints for using your WAKE UP Timer

- When the set time comes you will hear the most recently used source.
- The volume when the timer turns on the source is the volume last set when the CA-MXG7BK was used. This can be quite a surprise first thing in the morning, so you might want to reset it before going to sleep.
- If the CD is the most recently used source, it starts playing from the first track.


1
WAKE UP /SLEEP
SLEEP
2
0:05 → 0:10 → 0:15 → 0:30 → 1:00
cancelled ← 2:00 ← 1:45 ← 1:30 ← 1:15
SLEEP
SLEEP
OFF
8:15 21:50
current time
setting time

SLEEP Timer

Using this timer, you can fall asleep to music and know your CA-MXG7BK will turn off by itself rather than play all night.

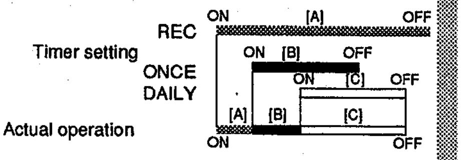
- SLEEP timer can be set only when the Unit is turned on.

1. **With the CA-MXG7BK on and a source playing, press the WAKE UP/ SLEEP button.**
   The SLEEP indicator on the display will start blinking.

2. **Set the length of time you want the source to play before shutting off.**
   Each time you press the WAKE UP/SLEEP button while SLEEP is blinking, the time shown on the display changes as shown at left and is added to the current time.
   The Unit will now turn off after the time you set.

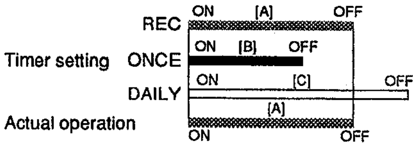
To cancel the Sleep Timer setting
Simply turn the Unit off. SLEEP indication disappears from the display.

A

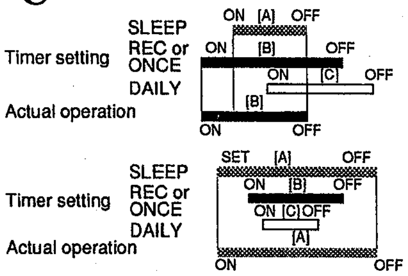


* [A], [B], and [C] indicate the different sources.

B

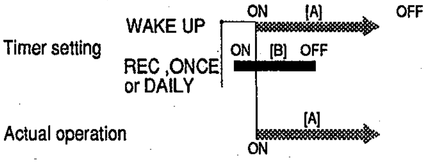


C



* Since the source cannot be selected for the SLEEPtimer, the source is always [B].

D



Timer Priority

Setting multiple timers within the same time range will make actual operation complicated.

The convenience and power of having several timers available can also create some complications. For instance, while the recording timer may be set to record a program from 8:00 am to 9:00 am, the Daily timer may be set to play a CD at 8:30 am. So will it interrupt the Radio recording, or will it just not come on, since timer recording is already on?

A little time spent understanding which timers have precedence, as explained below and with the charts on the left, will pay big divedends when use the timers.

A) If the Recording, ONCE, and DAILY timers are set within the same time range, each timer will come on at the time you have set. If another timer is already on, that timer will be shut off when the second timer starts. So if you are recording a radio broadcast with the Recording timer and the ONCE timer is set to start a different station playing during the recording, you will lose the recording at that point.

B) If the Recording, ONCE, and DAILY timers have the same starting time, the timer operation will be executed according to the following priority:
1. Recording timer
2. ONCE timer
3. DAILY timer

C) If the SLEEP timer has been set within the same time range as with another timer, the other timer operation will be executed to until the SLEEP timer shuts off the Unit. However, when the SLEEP timer shuts the Unit off, the SLEEP timer operation will take effect. Timer operations with starting times after the SLEEP timer's set time will not be executed. So be especially carefull when set the time the SLEEP timer shuts off the Unit.

D) The WAKE UP timer operation will have priority over any other timer operation.

E) If the SLEEP timer and AUTO POWER OFF have been set within the same time range, the timer operation with the earlier ending time will have priority.

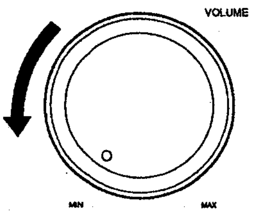
F) If a timer operation begins during AUTO POWER OFF, the timer operation will have priority.

G) If AUTO POWER OFF is used during a timer operation, AUTO POWER OFF will have priority.

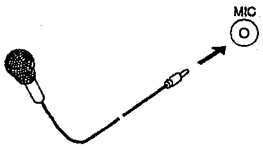
Karaoke (Sing Along)

Have you ever wished you could sing with a real band, in place of the lead singer? The KARAOKE button lets you use regular tapes, CDs or records as sources of sing-along music. When you press the KARAOKE button, the lead vocal is reduced, and you can replace it by singing into the microphone as the music plays.

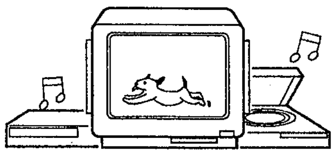
1



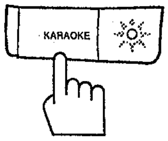
2



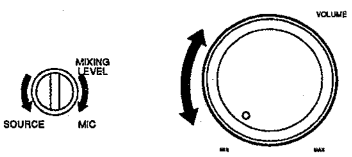
3



4



5



Setting the MIXING LEVEL

TOWARD	RESULT
SOURCE	Instrumental music source are emphasized
MIC	Your voice is emphasized

How to Sing Along with Karaoke

1. **Turn down the VOLUME control completely.**
2. **Attach the microphone (not supplied) by plugging it into the MIC jack in the amplifier section.**
3. **Start the source.**
   CD, tape, connected VCR, Record Player, etc.
4. **Press the KARAOKE button.**
   The LED on it will light up.
5. **Now adjust the volume of the source with the VOLUME control, and the volume of your voice with the MIXING LEVEL control as you sing into the microphone.**

To change the echo level

By adjusting the DIGITAL ECHO control, you can change the amount of echo in your voice.

Important information about Karaoke

- *Because the radio signal is not as reliable as signals coming from a tape or CD, you may not always get satisfactory results using the radio as a source for Karaoke.*
- *With this method of Karaoke the sound in the middle of the stereo field, which is usually a vocal, is reduced without recording the instrumental part. However, the voice part is not completely eliminated, only significantly reduced.*
- *Some tapes and CDs are better sources for singing along than others. Mono sources are not suitable for Karaoke.*
- *On sources with duets, strong echoes, a chorus, or with only a few instruments, the singer's voice may not be completely reduced.*
- *Poorly dubbed tapes may not work well for Karaoke.*

Using the Microphone Only

1. Attach the microphone.
2. Set the MIXING LEVEL to the MIC position.
3. Press the CD button from the source selecting buttons.
   If you hear the sound from a CD, press the STOP/CLEAR ■ button.
4. Adjust the VOLUME control.

Recording from the Microphone

You can use the microphone for recording:
Sound going into the microphone is mixed with sound sent to the tape in deck B from some other source, such as the CD, or radio.
You cannot record your singing-along when the main source is a tape in deck A.
See the procedure for recording on page 8 in the Easy Guide section.

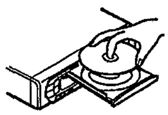
Note
To prevent howling and squealing when using the microphone, adjust the VOLUME control, and try not to point the microphone at the speakers.
When you are not using the microphone, disconnect the microphone.

Handling and Maintenance

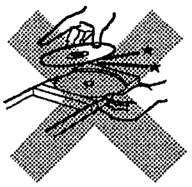
Compact Discs

Handle your compact discs, cassette tapes, and tape deck carefully, and they will last a long time.

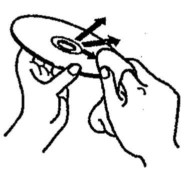
- Remove the CD from the case by holding it at the edges while pressing the center hole lightly.
- Do not touch the shiny surface of the CD, or bend the CD.



- Place the CD into the open tray with the label facing up.



- Put the CD back in its case after use to prevent warping.
- Be careful not to scratch the surface of the CD when placing it back in the case.
- Avoid exposure to direct sunlight, temperature extremes, and moisture.



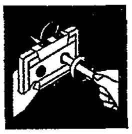
- A dirty CD may not play correctly. If a CD does become dirty, wipe it with a soft cloth in a straight line from center to edge.

CAUTION: Do not use any solvent (for example, conventional record cleaner, spray, thinner, benzine, etc.) to clean a CD.

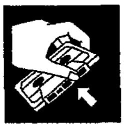
In general, you will have the best performance by keeping your tapes, CDs, and the mechanism clean.

- Store tapes and CDs in their cases, and keep them in cabinets or on shelves.
- Keep the tape deck tape carriers and the CD tray closed when not in use.

Cassette Tapes



- If the tape is loose in its cassette, take up the slack by inserting a pencil in one of the reels and rotating.
- If the tape is loose it may get stretched, cut, or caught in the cassette.

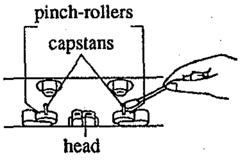


- Do not touch the tape surface.

- Do not store the tape:
  - -In dusty places
  - -In direct sunlight or heat
  - -In moist areas
  - -On a TV or speaker
  - -Near a magnet

Tape Deck

- If the heads, capstans, and pinch-rollers of the tape deck become dirty, the following will occur:
  - -Impaired sound quality
  - -Discontinous sound
  - -Fading
  - -Incomplete erasure
  - -Difficulty recording
- Clean the heads, capstans, and pinch-rollers using a cotton swab moistened with alcohol.

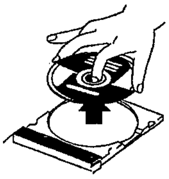


- If the heads become magnetized, they will produce noise or loose high frequencies.
- To demagnetize the heads, turn off the system, and use a head demagnetizer (available at electronics and record shops).

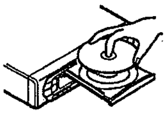
Handling and Maintenance

Compact Discs

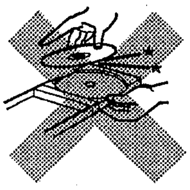
Handle your compact discs, cassette tapes, and tape deck carefully, and they will last a long time.



- Remove the CD from the case by holding it at the edges while pressing the center hole lightly.
- Do not touch the shiny surface of the CD, or bend the CD.



- Place the CD into the open tray with the label facing up.



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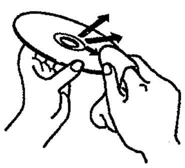
- Avoid exposure to direct sunlight, temperature extremes, and moisture.



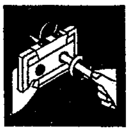
- A dirty CD may not play correctly. If a CD does become dirty, wipe it with a soft cloth in a straight line from center to edge.

CAUTION: Do not use any solvent (for example, conventional record cleaner, spray, thinner, benzine, etc.) to clean a CD.

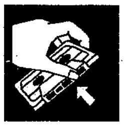
In general, you will have the best performance by keeping your tapes, CDs, and the mechanism clean.

- Store tapes and CDs in their cases, and keep them in cabinets or on shelves.
- Keep the tape deck tape carriers and the CD tray closed when not in use.

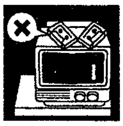
Cassette Tapes



- If the tape is loose in its cassette, take up the slack by inserting a pencil in one of the reels and rotating.
- If the tape is loose it may get stretched, cut, or caught in the cassette.



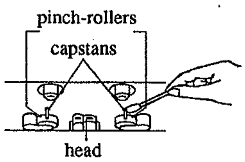
- Do not touch the tape surface.



- Do not store the tape:
  -In dusty places
  -In direct sunlight or heat
  -In moist areas
  -On a TV or speaker
  -Near a magnet

Tape Deck

- If the heads, capstans, and pinch-rollers of the tape deck become dirty, the following will occur:
  -Impaired sound quality
  -Discontinous sound
  -Fading
  -Incomplete erasure
  -Difficulty recording
- Clean the heads, capstans, and pinch-rollers using a cotton swab moistened with alcohol.



- If the heads become magnetized, they will produce noise or loose high frequencies.
- To demagnetize the heads, turn off the system, and use a head demagnetizer (available at electronics and record shops).

Troubleshooting

- If you are having a problem with your CA-MXG7BK, check this list for a possible solution before calling for service.
- If you cannot solve the problem from the hints given here, or the Unit has been physically damaged, call a qualified person, such as your dealer, for service.

Symptom	Possible Cause	ACTION
No sound is heard.	Connections are incorrect, or loose.	Check all connections and make corrections. (See pages 4 - 6.)
Impossible to record.	Cassette record protect tabs are removed.	Cover holes on back edge of cassette with tape.
Hard to listen to broadcasts because of noise.	The antenna is disconnected. The loop antenna is too close to the system. The feeder antenna is not properly extended and positioned.	Re-connect the antenna securely. Change the position and direction of the loop antenna. Extend feeder antenna at the best reception position.
The CD sound is discontinuous.	The CD is scratched or dirty.	Clean or replace the CD.
Unable to operate the Remote.	The path between the Remote and the sensor on the Unit is blocked. The batteries are discharged.	Remove the obstruction. Replace the batteries.
The CD tray cannot be operated.	The main AC power cord is not plugged in.	Plug in the AC power plug.
The CD does not play.	The CD is upside down.	Put the CD in with the label side up.
Operations are disabled.	The built in microprocessor may malfunction due to external electrical interference.	Unplug the system then plug it back in.
The cassette holder cannot be opened.	The system was turned off because the timer was operated while the tape was running.	Turn on the system.

Specifications

Amplifier

Output Power	
SPEAKERS A	19 watts per channel, min. RMS, both channels driven into 8 ohms at 1 kHz (DIN)
SPEAKERS B	21 watts per channel into 6 ohms at 80 Hz with 0.9% total harmonic distortion.
Total HarmonicDistortion at Half-Rated Power	0.07%

Audio Input Sensitivity/Impedance (1 kHz)	
PHONO	2.5 mV/50 kohms
VIDEO	300 mV/50 kohms
VCR/DCC/MD	300 mV/50 kohms
AUX	300 mV/50 kohms

Audio Output Load/Impedance	
VCR/DCC/MD	150 mV/5 kohms

Video Input	
VCR/VD/CD	1 Vp-p/75 ohms

Video Output	
VCR/MONITOR	1Vp-p/75 ohms

Dimensions (WxHxD)	275 x 124 x 299 mm (10 - 7/8" x 5" x 11 - 7/8")
Weight	5.1 kg (11.2Ibs)

Tuner

FM

Tuning Range	87.5 ~ 108.0 MHz
Usable Sensitivity	0.95 μV/75 ohms (10.8 dBf)
Signal-to-Noise Ratio (IHF-A weighted/DIN)	MONO (at 85 dBf) 80 dB STEREO (at 85 dBf) 73 dB/64 dB

AM

Tuning Range	522 ~ 1,629 kHz
Dimensions (WxHxD)	275 x 124 x 299 mm (10 - 7/8" x 5" x 11 - 7/8")
Weight	5.1 kg (11.2Ibs)

Tape deck

Frequency response	
Normal:	30 – 16,000 Hz
CrO_2:	30 – 15,000 Hz
Metal:	30 – 17,000Hz
Wow and Flutter (WRMS/DIN)	0.09%/0.2%
Dimensions (WxHxD)	275 x 124 x 267 mm (10 - 7/8" x 2 - 3/4"" x 10 -5/8")
Weight	2.9 kg (6.5 Ibs)

Compact Disc Player

Dynamic Range (1 kHz)	90 dB
Signal-to-Noise Ratio	100 dB
Wow and Flutter	Unmeasurable
Dimensions (WxHxD)	275 x 68 x 265 mm (10 - 7/8" x 2 - 11/16" x 10 - 1/2")
Weight	2.0 kg (4.5 Ibs)

Graphic Equalizer

SEA Center frequencies	63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz 6.3 kHz, 16 kHz
SEA Control Range	±12dB ±1dB
Dimensions (WxHxD)	275 x 90 x 267 mm (10 - 7/8' x 3 - 5/8" x 10 - 5/8")
Weight	1.6 kg (3.6 Ibs)

Power Specifications

Line Voltage & Frequency	110/127/220/240VAC, selectable, 50/60Hz
Max. Power Consumption	325 watts
Power Consumption	165 watts

Supplied Accessories

FM feeder antenna (1)
AM loop antenna (1)
Remote control (RM-SEMXG7XU) (1)
Batteries R03(UM-4)/AAA(24F) (2)
AC plug adaptor (1)
Antenna adaptor (1)

Optional Speakers SP-MXG7BK

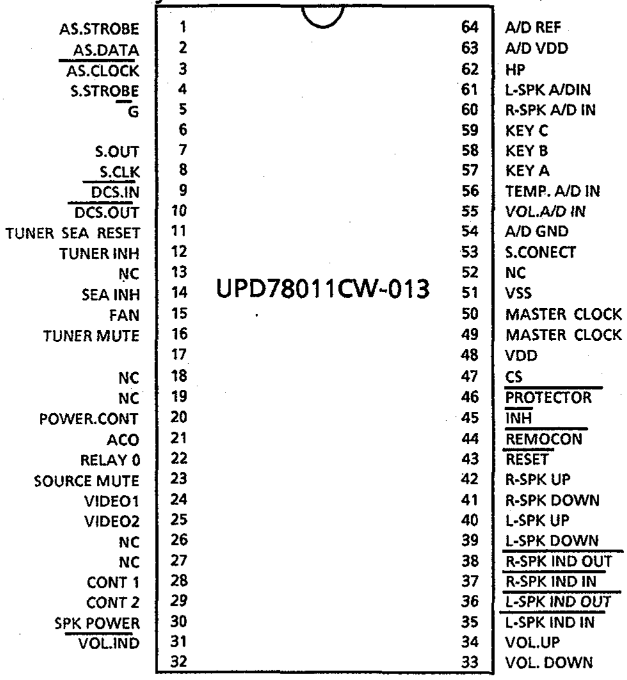
speaker system	3-way speaker system; Bass reflex
Low/Mid/High range (electro motive)/Tweeter	
Super Woofer	16.5 cm (6-1/2") cone type (low-range)
speaker Units	9.0 cm (3-9/16) cone type (mid-range) 5.5 cm (2-3/16") cone type (tweeter)
sensitivity	86 dB/W/m
Effective Frequency Range	
Low range speaker	38 Hz–200 Hz (MXG7BK System total)
Mid/High range speaker	120Hz - 20000Hz
Rated Impedance	
Low range speaker	6 ohms
Mid/High range speaker	8 ohms
Dimensions (WxHxD)	230 x 426 x 281 mm (9 - 1/16" x 16 - 3/16" x 11 - 1/8")
Weight	6.5 kg (14.4Ibs) each
Supplied Accessory	Speaker cords (2)

Design and specifications subject to change without notice.

Description of ICs

■ UPD78011CW-013(IC701) : System controller

1. Terminal Layout


UPD78011CW-013
AS.STROBE 1
AS.DATA 2
AS.CLOCK 3
S.STROBE 4
G 5
6
S.OUT 7
S.CLK 8
DCS.IN 9
DCS.OUT 10
TUNER SEA RESET 11
TUNER INH 12
NC 13
SEA INH 14
FAN 15
TUNER MUTE 16
17
NC 18
NC 19
POWER.CONT 20
ACO 21
RELAY 0 22
SOURCE MUTE 23
VIDEO1 24
VIDEO2 25
NC 26
NC 27
CONT 1 28
CONT 2 29
SPK POWER 30
VOL.IND 31
32
64 A/D REF
63 A/D VDD
62 HP
61 L-SPK A/DIN
60 R-SPK A/D IN
59 KEY C
58 KEY B
57 KEY A
56 TEMP. A/D IN
55 VOL.A/D IN
54 A/D GND
53 S.CONECT
52 NC
51 VSS
50 MASTER CLOCK
49 MASTER CLOCK
48 VDD
47 CS
46 PROTECTOR
45 INH
44 REMOCON
43 RESET
42 R-SPK UP
41 R-SPK DOWN
40 L-SPK UP
39 L-SPK DOWN
38 R-SPK IND OUT
37 R-SPK IND IN
36 L-SPK IND OUT
35 L-SPK IND IN
34 VOL.UP
33 VOL. DOWN

2. Key input (KEY A~C)

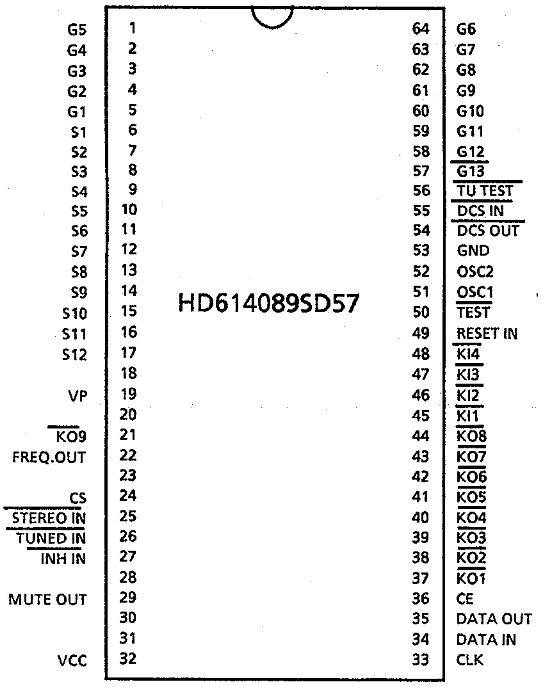
KEY A	KEY B	KEY C
AI LOUDNESS	SOURCE DIRECT	TUNER ENTRY
VIDEO	VTR	AI SLEEP
CD/CDG	PHONO	–
AUX	TUNER	–
TAPE	POWER	–

3. Terminal Description

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	AS STROBE	O	Strobe for data transmission to IC201	33	VOL.DOWN	O	Volume control signal
2	AS DATA	O	Data to IC201	34	VOL UP	O	Volume control signal
3	AS CLOCK	O	Clock for data transmission	35	L-SPK IND IN	O	Inner indication of left panorama speaker
4	S.STROBE	O	Strobe for IC902 and 903	36	L-SPK IND OUT	O	Outer indication of left panorama speaker
5	G	O	Enable for IC902 and 903	37	R-SPK IND IN	O	Inner indication of right panorama speaker
6	–	--	Connected to GND	38	R-SPK IND OUT	O	Outer indication of right panorama speaker
7	S.OUT	O	Data for IC902 and 903	39	L-SPK DOWN	O	Panorama speaker control
8	S. CLK	O	Data latch clock for IC902 and 903	40	L-SPK UP	O	Panorama speaker control
9	DCS IN	I	Compulink signal input	41	R-SPK DWON	O	Panorama speaker control
10	DCS OUT	O	Compulink signal output	42	R-SPK UP	O	Panorama speaker control
11	TU./SEA RESET	O	Reset signal for tuner and sea	43	RESET	I	Reset signal
12	TUNER INH	O	Inhibit signal for tuner controller	44	REMOCON	I	Remote control signal input
13	–	--	Non connection	45	INH	I	Inhibit signal input
14	SEA INH	O	Inhibit for sea controller	46	PROTECTOR	I	Input from protector
15	FAN	O	Fan control signal	47	CS	I	Chip select
16	TUNER MU.	O	Tuner muting signal	48	VDD	--	Power supply
17	–	--	Connected to GND	49	M. CLOCK	--	Oscillation terminal
18	NC	--	Non connection	50	M. CLOCK	--	Oscillation terminal
19	NC	--	Non connection	51	VSS	--	GND
20	P.CONT	O	Power on : H (Cassette deck , SEA)	52	–	--	Non connection
21	ACO	O	Regulator control (Power on : H)	53	S.CONNECT	--	Connected to +5V
22	RELAY 0	O	Relay control signal for main speaker	54	A/D GND	--	GND
23	SOURCE MUTE	O	Mute (Power on/off , Changing source)	55	VOL A/D IN	I	Observing the position of master volume
24	VIDEO1	O	Video selector control	56	TEMP A/D IN	I	Sensing temperature
25	VIDEO2	O	Video selector control	57	KEY A	I	Key input
26	–	--	Non connection	58	KEY B	I	Key input
27	–	--	Non connection	59	KEY C	I	Key input
28	CONT 1	O	Source selector control (IC203)	60	R-SPK A/D IN	I	Observing the position of the right speaker
29	CONT 2	O	Source selector control (IC203)	61	L-SPK A/D IN	I	Observing the position of the left speaker
30	SPK POWER	O	Power control for panorama speaker	62	HP	I	Observing the connect of the headphone
31	VOL IND	O	Indication control	63	A/D VDD	--	Power supply for inner A/D converter
32	–	--	Connected to GND	64	A/D REF	I	Reference voltage for inner A/D converter

■ HD614089SD57(IC901) : Tuner Controller

1. Terminal Layout


HD614089SD57
G5 1
G4 2
G3 3
G2 4
G1 5
S1 6
S2 7
S3 8
S4 9
S5 10
S6 11
S7 12
S8 13
S9 14
S10 15
S11 16
S12 17
18
VP 19
20
KO9 21
FREQ.OUT 22
23
CS 24
STEREO IN 25
TUNED IN 26
INH IN 27
28
MUTE OUT 29
30
31
VCC 32
64 G6
63 G7
62 G8
61 G9
60 G10
59 G11
58 G12
57 G13
56 TU TEST
55 DCS IN
54 DCS OUT
53 GND
52 OSC2
51 OSC1
50 TEST
49 RESET IN
48 KI4
47 KI3
46 KI2
45 KI1
44 KO8
43 KO7
42 KO6
41 KO5
40 KO4
39 KO3
38 KO2
37 KO1
36 CE
35 DATA OUT
34 DATA IN
33 CLK

2.Key matrix

	KI 1 (PIN45)	KI 2 (PIN46)	KI 3 (PIN47)	KI 4 (PIN48)
KO 1 (PIN37)	WAKE UP /SLEEP	ONCE TIMER	DAILY TIMER	REC TIMER
KO 2 (PIN38)	–	CLOCK ADJ.	CANCEL	MEMORY
KO 3 (PIN39)	UP	DOWN	PRESET UP	PRESET DOWN
KO7 (PIN43)	AUTO MEMORY	AUTO /MONO	FM	AM
KO 8 (PIN44)	–	–	(TEST POINT)	–

3. Terminal Description

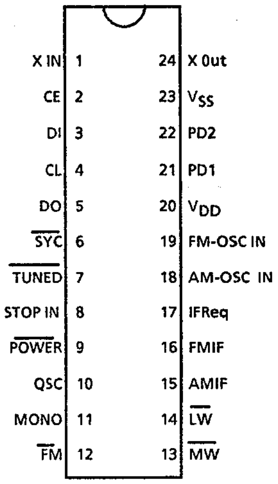
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	G5	O	Grid control	33	CLK	O	Clock for PLL synthesizer
2	G4	O	Grid control	34	DATA IN	I	Data from PLL synthesizer
3	G3	O	Grid control	35	DATA OUT	O	Data for PLL synthesizer
4	G2	O	Grid control	36	CE	O	Chip enable signal for PLL synthesizer
5	G1	O	Grid control	37	KO1	O	Key matrix output
6	S1	O	Segment control	38	KO2	O	Key matrix output
7	S2	O	Segment control	39	KO3	O	Key matrix output
8	S3	O	Segment control	40	KO4	--	Non connection
9	S4	O	Segment control	41	KO5	--	Non connection
10	S5	O	Segment control	42	KO6	O	Key matrix output
11	S6	O	Segment control	43	KO7	O	Key matrix output
12	S7	O	Segment control	44	KO8	O	Key matrix output
13	S8	O	Segment control	45	KI1	I	Key matrix input
14	S9	O	Segment control	46	KI2	I	Key matrix input
15	S10	O	Segment control	47	KI3	I	Key matrix input
16	S11	O	Segment control	48	KI4	I	Key matrix input
17	S12	O	Segment control	49	RESET IN	I	Reset signal input
18	—	--	Non cennection	50	TEST	I	Test mode terminal
19	VP	I	Power supply for fl display	51	OSC I	--	Oscillation terminal
20	—	--	Non connection	52	OSC 2	--	Oscillation terminal
21	KO9	--	Non connection	53	GND	--	GND
22	FREQ OUT	O	Clock frequency	54	DCS OUT	O	Compulink signal output
23	—	--	Non connection	55	DCS IN	I	Compulink signal input
24	—	--	Connected to GND	56	TU TEST	I	Test mode terminal
25	STEREO IN	I	For the indication of 'STEREO'	57	G13	O	Grid control signal
26	TUNED IN	I	For the indication of 'TUNED'	58	G12	O	Grid control signal
27	INH IN	I	Inhibit input	59	G11	O	Grid control signal
28	—	--	Non connection	60	G10	O	Grid control signal
29	MUTE OUT	O	Muting tuner sound	61	G9	O	Grid control signal
30	—	--	Non connection	62	G8	O	Grid control signal
31	—	--	Non connection	63	G7	O	Grid control signal
32	VCC	--	Power supply	64	G6	O	Grid control signal

■ LC7218 (IC102) : PLL Synthesizer

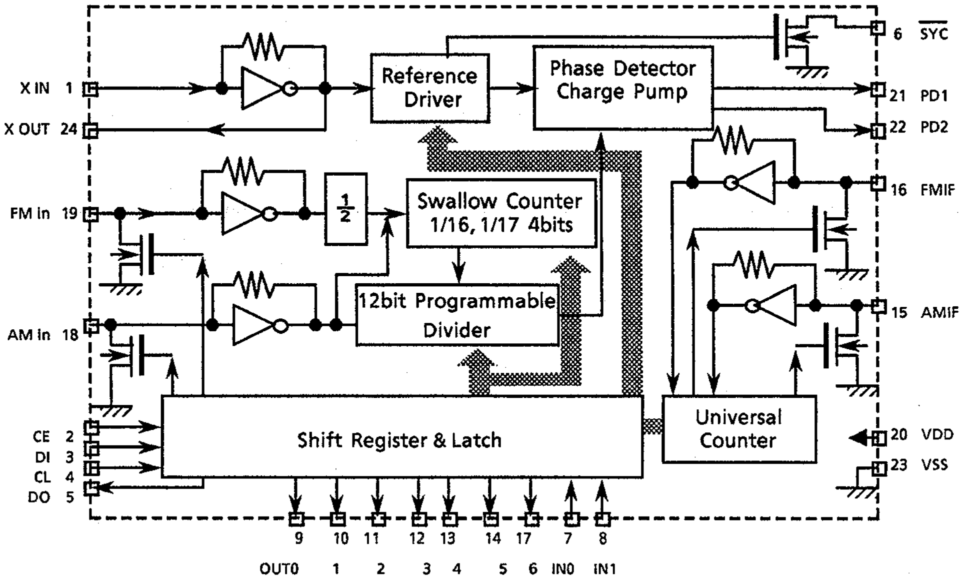
1. The main function descriptions

(1) It makes the local oscillation frequency by the control data from IC901.
(2) Decode the control signal and transmit the signal for receiving conditions.
(3) For the best tuning, count the internal-frequency and transmit the data to IC901.

2. Terminal Layout


X IN 1
CE 2
DI 3
CL 4
DO 5
SYC 6
TUNED 7
STOP IN 8
POWER 9
QSC 10
MONO 11
FM 12
24 X Out
23 V_{SS}
22 PD2
21 PD1
20 V_{DD}
19 FM-OSC IN
18 AM-OSC IN
17 IFReq
16 FMIF
15 AMIF
14 LW
13 MW

3. Block Diagram


X IN 1
X OUT 24
FM In 19
AM In 18
CE 2
DI 3
CL 4
DO 5
Reference Driver
Phase Detector Charge Pump
1/2
Swallow Counter 1/16, 1/17 4bits
12bit Programmable Divider
Shift Register & Latch
Universal Counter
6 SYC
21 PD1
22 PD2
16 FMIF
15 AMIF
20 VDD
23 VSS
9 10 11 12 13 14 17 7 8
OUT0 1 2 3 4 5 6 IN0 IN1

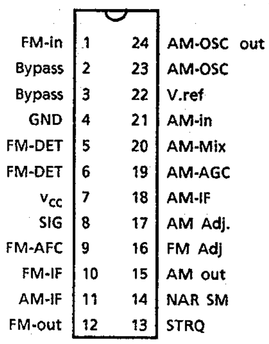
4. Terminal Description

Pin No.	Symbol	I/O	Functions and Operations
1,24	X in , X out	I/O	Crystal oscillator (7.2MHz).
2	CE	I	Fix the chip enable to "H" when inputting (DI) and outputting (DO) the serial data.
3	DI	I	Receive the control data from the controller (IC901).
4	CL	I	This clock is used to synchronize data when transmitting the data of DI and DO.
5	DO	O	Transmit the data from LC7218 to the controller which is synchronized with CL.
6	SYC	—	Not used.
7	Tuned	I	Receive the tuned signal from IC104 (LA1266A).
8	Stop in	I	Not used.
9	POWER	O	Not used.
10	QSC	O	ON mode with " H " and OFF mode with " L ". (Not used)
11	MONO	O	It is "H" on FM-monaural, "L" on FM-Stereo.
12	FM	O	It is "L" on FM mode.
13	MW	O	It is "L" on MW mode.
14	LW	—	It is "L" on LW mode.
15	AM-IF	I	Universal counter input for AM-IF from IC104 (LA1266A).
16	FM-IF	I	Universal counter input for FM-IF from IC104(LA1266A).
17	IF REQ	O	Output the "IF-signal request" to IC104 when the pin-7 (tuned in) goes to "H".
18	AM OSC	I	Input the local oscillator signal of AM.
19	FM OSC	I	Input the local oscillator signal of FM.
20	V_{DD}	—	This is a terminal of power supply.
21	PD1	O	PLL charge pump output: When the local oscillator signal frequency is higher than the reference frequency high level signals will output. When it is lower than the reference frequency, low level signals will output. When it is same as reference frequency signals, it will be floating.
22	PD2	O	Not used.
23	Vss	—	Power supply.

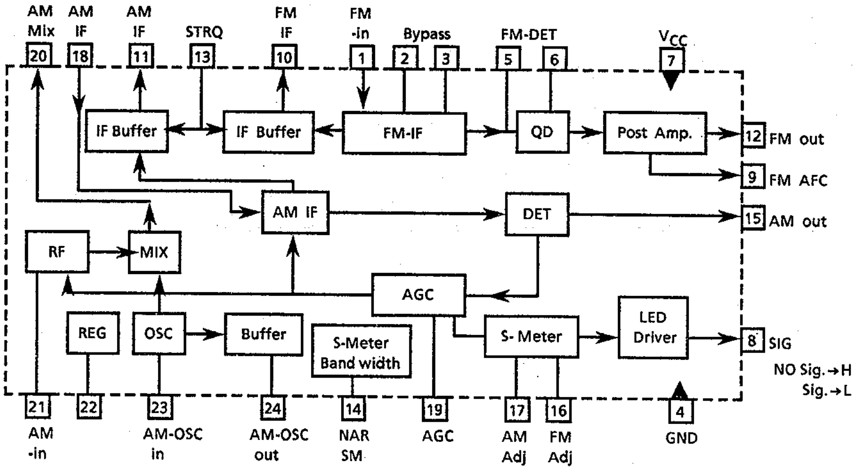
■ LA1266A (IC104) : FM AM IF AMP & detector

1. The main function descriptions
   (1) Amplify and detect of FM intermodulation frequencies.
   (2) It has local oscillator and mixer for AM, and amplify the AM-IF signal.

2. Terminal Layout


FM-in 1
Bypass 2
Bypass 3
GND 4
FM-DET 5
FM-DET 6
Vcc 7
SIG 8
FM-AFC 9
FM-IF 10
AM-IF 11
FM-out 12
24 AM-OSC out
23 AM-OSC
22 V.ref
21 AM-in
20 AM-Mix
19 AM-AGC
18 AM-IF
17 AM Adj.
16 FM Adj
15 AM out
14 NAR SM
13 STRQ

3. Block Diagram


AM Mix 20
AM IF 18
AM IF 11
STRQ 13
FM IF 10
FM -in 1
Bypass 2 3
FM-DET 5 6
Vcc 7
IF Buffer
IF Buffer
FM-IF
QD
Post Amp.
12 FM out
9 FM AFC
AM IF
DET
15 AM out
RF
MIX
AGC
REG
OSC
Buffer
S-Meter Band width
S- Meter
LED Driver
8 SIG
NO Sig.→H
Sig.→L
21 AM -in
22
23 AM-OSC in
24 AM-OSC out
14 NAR SM
19 AGC
17 AM Adj
16 FM Adj
4 GND

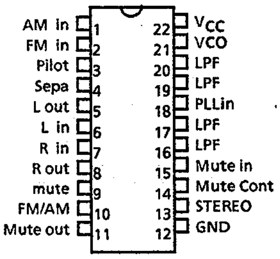
4. Terminal Description

Pin No.	Symbol	I/O	Functions and Operations
1	FM in	I	This is an input terminal of FM IF Signal.
2,3	Bypass	--	Bypass of FM IF Amp.
4	GND	--	This is the device ground terminal.
5,6	FM DET	--	FM detect transformer.
7	V_{CC}	--	This is the power supply terminal.
8	SIG	O	When the machine is tunning ,this terminal becomes "L".
9	FM AFC	O	This is an output terminal of voltage for FM - AFC(Auto frequency control).
10	FM IF	O	When the signal of IF REQ of IC102(LC7218) appear, the signal of FM IF output.
11	AM IF	O	When the signal of IF REQ of IC102(LC7218) appear, the signal of AM IF output.
12	FM out	O	FM composite signal out
13	STRQ	I	The IF-signals come out from pin10 (FM-IF) or pin11 (AM-IF) while this terminal going to "High".
14	NAR SM	--	Control the Band-width of signal meter.
15	AM out	O	AM signal out
16	FM Adj	--	For adjusting the stop level (or mute level) of FM.
17	AM Adj	--	For adjusting the stop level (or mute level) of AM.
18	AM-IF	I	Input of AM IF Signal.
19	AM-AGC	I	This is an AGC voltage Input terminal for AM.
20	AM-MIX	O	This is an output terminal for AM mixer.
21	AM-IN	I	This is an input terminal for AM RF Signal.
22	V.REF	--	Resistor value between pin9 and pin22 desides the frequency width of the input signal.
23	AM-OSC	--	This is a terminal of AM Local oscillation circuit.
24	AM-OSC out	O	AM Local Oscillation Signal output.

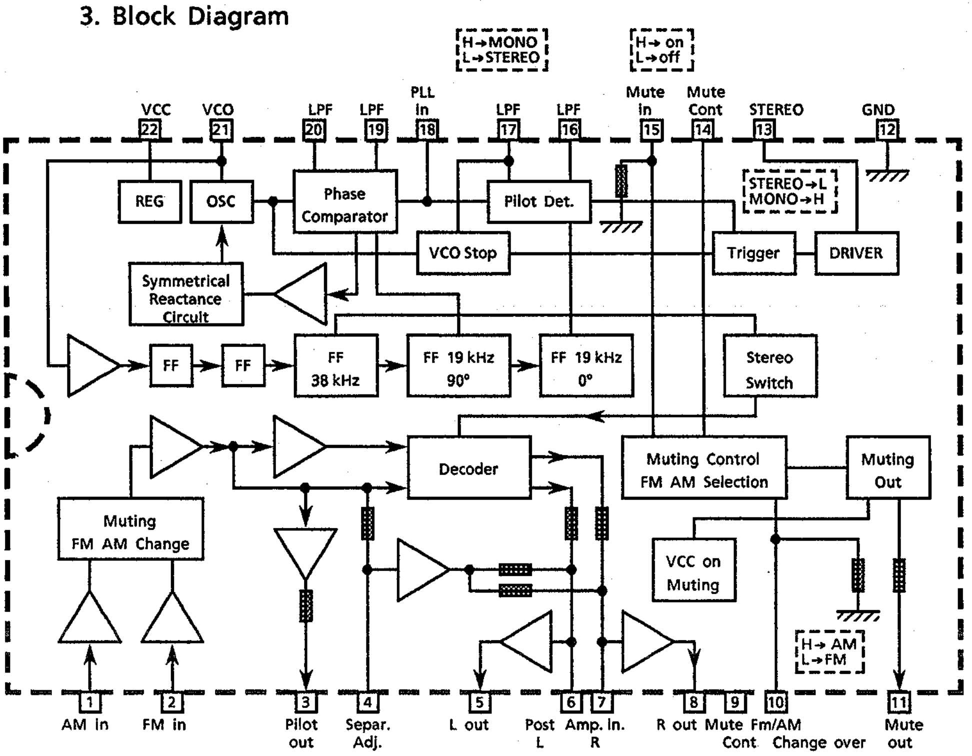
■ LA3401 (IC105) : FM MPX Detector

1. The main function descriptions
   (1) Detect the FM multiplex signal (Stereo signal).
   (2) When receiving FM stereo signal, it outputs the signal for indication.
   (3) AM / FM audio amplifier.

2. Terminal Layout


AM in 1
FM in 2
Pilot 3
Sepa 4
L out 5
L in 6
R in 7
R out 8
mute 9
FM/AM 10
Mute out 11
22 Vcc
21 VCO
20 LPF
19 LPF
18 PLLin
17 LPF
16 LPF
15 Mute in
14 Mute Cont
13 STEREO
12 GND

3. Block Diagram

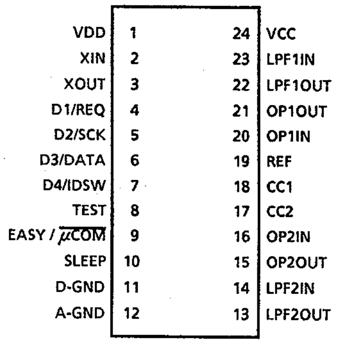

H→MONO
L→STEREO
H→ on
L→off
VCC 22
VCO 21
LPF 20
LPF 19
PLL In 18
LPF 17
LPF 16
Mute In 15
Mute Cont 14
STEREO 13
GND 12
REG
OSC
Phase Comparator
Pilot Det.
STEREO→L
MONO→H
VCO Stop
Trigger
DRIVER
Symmetrical Reactance Circuit
FF
FF
FF 38 kHz
FF 19 kHz 90°
FF 19 kHz 0°
Stereo Switch
Decoder
Muting Control FM AM Selection
Muting Out
Muting FM AM Change
VCC on Muting
H→ AM
L→FM
1 AM In
2 FM in
3 Pilot out
4 Separ. Adj.
5 L out
6 Post L
7 Amp. In. R
8 R out
9 Mute Cont
10 Fm/AM Change over
11 Mute out

4. Terminal Description

Pin No.	Symbol	I/O	Functions and Operations
1	AM in	I	This is an input terminal for AM signal.
2	FM in	I	This is an input terminal for FM composite signal.
3	Pilot out	O	Output of MPX pilot signal (Connect to Pin18).
4	Sepa. Adj.	--	Separation adjustment.
5	L. out	O	Left channel signal output.
6	L	I	Input terminal of the left channel post-amplifier
7	R	I	Input terminal of the right channel post-amplifier
8	R out	O	Right channel signal output
9	Mute Cont	--	The mute time is controlled by the connected capacitor when turning the power switch on.
10	FM / AM	I	Change over the FM / AM input. "H" : AM, "L" : FM
11	Mute out	---	Not used
12	GND	--	Ground terminal.
13	Stereo	O	Stereo indicator output. Stereo : "L", Mono : "H"
14	Mute Cont	--	The mute time is controlled by the connected capacitor when changing over the FM / AM .
15	Mute in	I	Mute signal input. "H" : Mute on, "L" : Mute off.
16	LPF	--	Low pass filter of pilot detector.
17	LPF	--	While this terminal goes to "H", the VCO stops.
18	Pilot in	I	Pilot signal input
19	LPF	--	Low-pass filter of PLL.
20	LPF	--	Low-pass filter of PLL.
21	VCO	I	Voltage controlled oscillator terminal.
22	V_{CC}	--	Power supply.

■ M65831FP (IC421) : Digital Echo

1.Terminal Layout

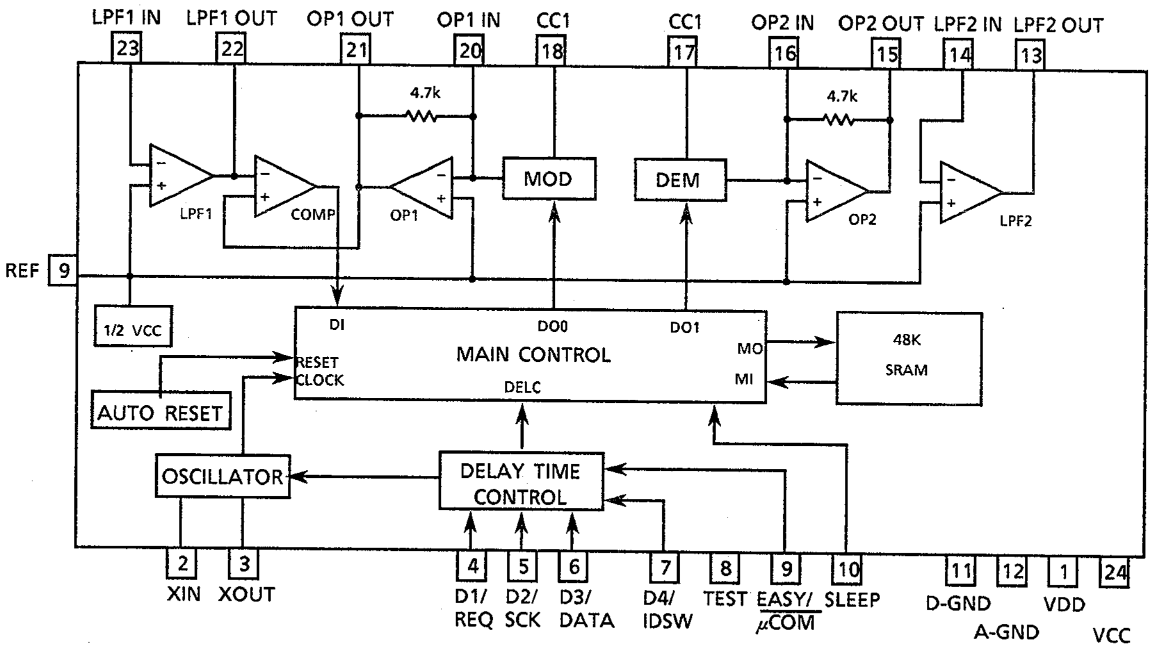

VDD 1
XIN 2
XOUT 3
D1/REQ 4
D2/SCK 5
D3/DATA 6
D4/IDSW 7
TEST 8
EASY/$\overline{\mu COM}$ 9
SLEEP 10
D-GND 11
A-GND 12
24 VCC
23 LPF1IN
22 LPF1OUT
21 OP1OUT
20 OP1IN
19 REF
18 CC1
17 CC2
16 OP2IN
15 OP2OUT
14 LPF2IN
13 LPF2OUT

ADM : Adaptive
Delta
Modulation

2.Terminal Description

Pin No	Symbol	I/O	Function	Pin No	Symbol	I/O	Function
1	VDD	–	Power supply (Digital)	13	LPF2OUT	O	Filter output
2	XIN	I	Oscillation terminal	14	LPF2IN	I	Filter input
3	XOUT	O	Oscillation terminal	15	OP2OUT	O	OP amp output
4	D1	I	Connected to GND	16	OP2IN	I	OP amp input
5	D2/SCK	I	Connected to GND	17	CC2	–	ADM control
6	D3/DATA	I	Connected to +5V	18	CC1	–	ADM control
7	D4/IDSW	I	Connected to +5V	19	REF	–	Reference voltage
8	TEST	I	Connected to GND	20	OP1IN	I	OP amp input
9	EASY/ μCOM	I	Interface select	21	OP1OUT	O	OP amp output
10	SLEEP	I	Connected to GND	22	LPF1OUT	O	Filter output
11	DGND	–	Gnd for digital circuit	23	LPF1IN	I	Filter input
12	AGND	–	GND for analog circuit	24	VCC	–	Power supply (Analog)

3. Block Diagram

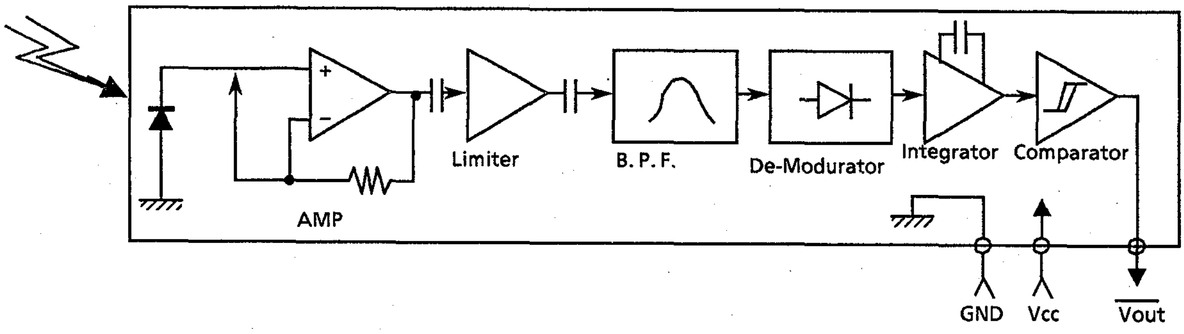

LPF1 IN 23
LPF1 OUT 22
OP1 OUT 21
OP1 IN 20
CC1 18
CC1 17
OP2 IN 16
OP2 OUT 15
LPF2 IN 14
LPF2 OUT 13
4.7k
4.7k
LPF1
COMP
OP1
MOD
DEM
OP2
LPF2
REF 9
1/2 VCC
DI
DO0
DO1
MAIN CONTROL
RESET
CLOCK
DELC
MO
MI
48K SRAM
AUTO RESET
OSCILLATOR
DELAY TIME CONTROL
2 XIN
3 XOUT
4 D1/ REQ
5 D2/ SCK
6 D3/ DATA
7 D4/ IDSW
8 TEST
9 EASY/ $\overline{\mu COM}$
10 SLEEP
11 D-GND
12 A-GND
1 VDD
24 VCC

4. Operation

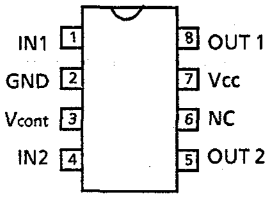
1) When EASY/μCOM is 'L', D1, D2, D3 and D4 are used as REQ, SCK, DATA and IDSW. In this case, DATA which is used to set the delay time and sleep mode, is read at the falling edge of SCK while REQ is 'L'.
2) When EASY/μCOM is 'H', the delay time depends on the function table below.
3) When SLEEP is 'H', the operations stop.

D4 PIN7	D3 Pin6	D2 Pin5	D1 Pin4	Sampling frequency	Delay time (mSEC)	D4 PIN7	D3 Pin6	D2 Pin5	D1 Pin4	Sampling frequency	Delay time (mSEC)
L	L	L	L	500kHz	12.3	H	L	L	L	250kHz	110.6
L	L	L	H	500kHz	24.6	H	L	L	H	250kHz	122.9
L	L	H	L	500kHz	36.9	H	L	H	L	250kHz	135.2
L	L	H	H	500kHz	49.2	H	L	H	H	250kHz	147.5
L	H	L	L	500kHz	61.4	H	H	L	L	250kHz	159.7
L	H	L	H	500kHz	73.7	H	H	L	H	250kHz	172.0
L	H	H	L	500kHz	86.0	H	H	H	L	250kHz	184.3
L	H	H	H	500kHz	98.3	H	H	H	H	250kHz	196.6

■ GP1U901X (IC904) : Receiver for Remote Control


+
-
AMP
Limiter
B. P. F.
De-Modurator
Integrator
Comparator
GND
Vcc
$\overline{\text{Vout}}$

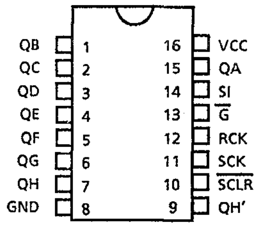
■ LB1639-CV (IC702,703,704) : Motor Driver


IN1 1
GND 2
Vcont 3
IN2 4
8 OUT 1
7 Vcc
6 NC
5 OUT 2

IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	CLOCKWISE
L	H	L	H	COUNTER-CLOCKWISE
H	H	OFF	OFF	WAITING
L	L	OFF	OFF	WAITING

■ TC74HC595AP(IC902,903) : 8-Bit Shift Register

1. Terminal Layout


QB 1
QC 2
QD 3
QE 4
QF 5
QG 6
QH 7
GND 8
16 VCC
15 QA
14 SI
13 $\overline{\text{G}}$
12 RCK
11 SCK
10 $\overline{\text{SCLR}}$
9 QH'

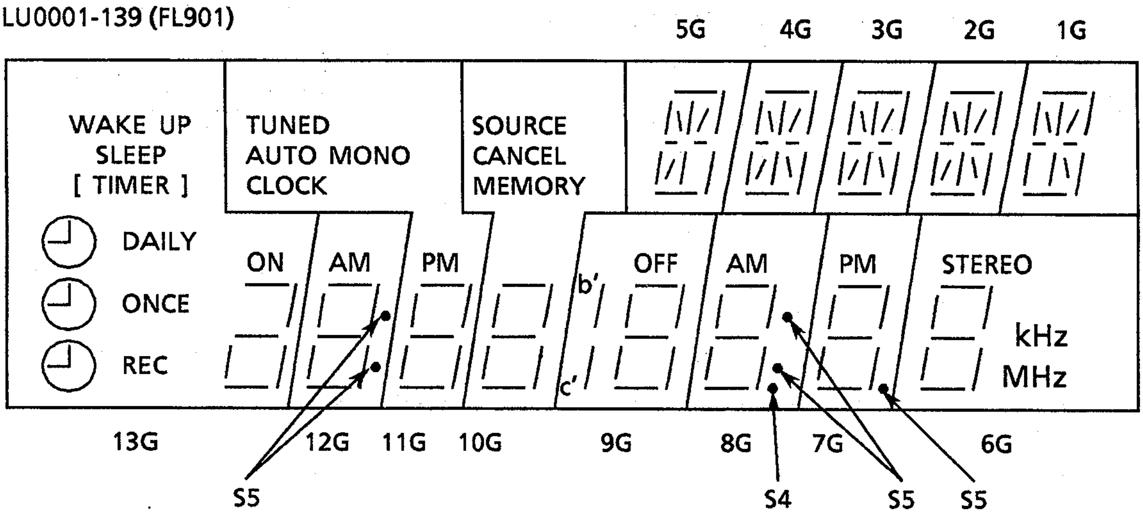
2. Function Table

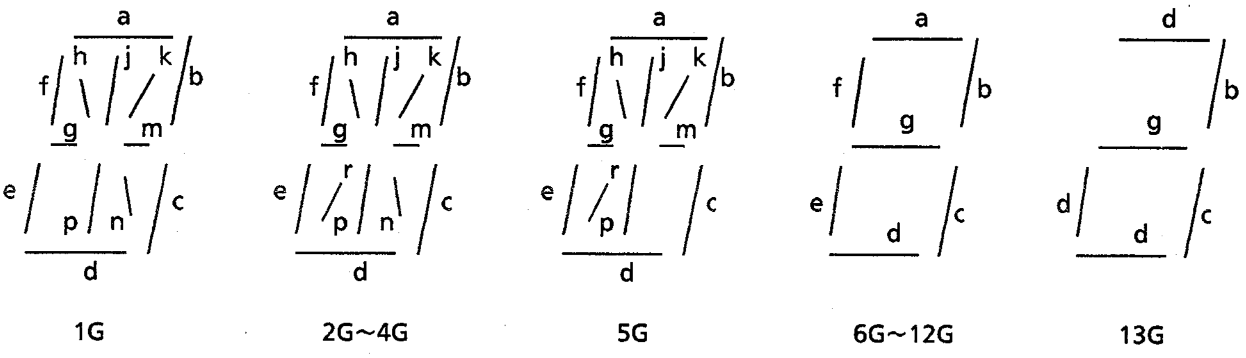
Inputs					Functions
SI	SCK	$\overline{\text{SCLR}}$	RCK	$\overline{\text{G}}$	
X	X	X	X	H	Output (QA-QH) disable.
X	X	X	X	L	Output (QA-QH) enable.
X	X	L	X	X	Shift register is cleared.
L	↑	H	X	X	Condition of shift register in initial stage is "L". In the other stages, data from the former stage is stored.
H	↑	H	X	X	Condition of shift register in initial stage is "H". In the other stages, data from the former stage is stored.
X	↓	H	X	X	Shift register does not change.
X	X	X	↑	X	Shift register data is stored in the storage register.
X	X	X	↓	X	Shift register does not change.

X : Don't care

Internal Connection of FL Display

■ ELU0001-139 (FL901)


5G
4G
3G
2G
1G
WAKE UP
SLEEP
[TIMER]
DAILY
ONCE
REC
TUNED
AUTO MONO
CLOCK
SOURCE
CANCEL
MEMORY
ON
AM
PM
b'
c'
OFF
AM
PM
STEREO
kHz
MHz
13G
12G
11G
10G
9G
8G
7G
6G
S5
S4
S5
S5


a
h
j
k
f
b
g
m
e
p
n
c
d
r
1G
2G~4G
5G
6G~12G
13G

Connection

	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	d	d	d	d	d	d	d	d	d	d	d	d	d
S2	---	e	e	e	e	e	e	e	e	e	e	e	e
S3	c	c	c	c	c	c	c	c	c	c	c	c	c
S4	g	----	TUNED	----	b' c'	DP (.)	----	kHz	r	r	r	r	m
S5	b	DP(:)	AUTO	SOURCE	----	DP (:)	DP (.)	MHz	m	n	n	n	n
S6	DAILY & mark	----	MONO	----	----	----	----	----	j p	j p	j p	j p	j p
S7	ONCE & mark	g	g	g	g	g	g	g	g	g m	g m	g m	g
S8	REC & mark	f	f	f	f	f	f	f	f	f	f	f	f
S9	WAKEUP	b	b	b	b	b	b	b	b	b	b	b	b
S10	SLEEP	a	a	a	a	a	a	a	a	a	a	a	a
S11	ON	----	CLOCK	CANCEL	OFF	----	----	----	h	h	h	h	h
S12	[TIMER]	AM	PM	MEMORY	----	AM	PM	STEREO	k	k	k	k	k

Terminal Function

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Electrode	F1	F1	NP	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G				
Terminal No.						17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Electrode						S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	NP	F2	F2

F : Filament G : Grid S : Segment NP : No Pin

Disassembly Procedures

■ Removing the metal cover

1. Remove the 2 screws Ⓐ fastening the both sides of the cover and 4 screws Ⓑ fixing the back of the cover to remove the cover.

■ Removing the front panel assembly

1. Remove the metal cover.
2. Remove the master volume knob to remove the nut fixing the volume. Disconnect the connector of the volume indicator at the same time.
3. Disconnect the connectors JB901, J302, J303, J304, J305 and J441.
   J441 : For universal version
   J302 : Except universal version
4. Remove the screw Ⓒ and release the 3 hooks to remove the assembly.

■ Removing the rear panel

1. Remove the 16 screws Ⓓ.
2. Release the 2 hooks to remove the rear panel.

※ When installing the rear panel, arrange the wire from the fan so that the wire does not disturb the fan operation (Figure 2).

■ Removing the main circuit board

1. Remove the front panel assembly.
2. Disconnect the connectors JB801 and J803.
3. Remove the rear panel.
4. Remove the 7 screws fixing the main circuit board to remove the circuit board.(If neccesary, remove the circuit boards on the main circuit board.)

■ Removing the front circuit board

1. Remove the front panel assembly.
2. Remove the balance (echo level) and twin bass knobs.
3. Remove the 8 screws Ⓕ fixing the front circuit board to remove the circuit board.

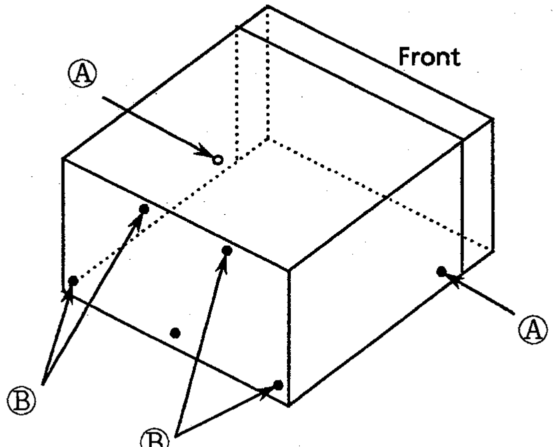


Figure 1

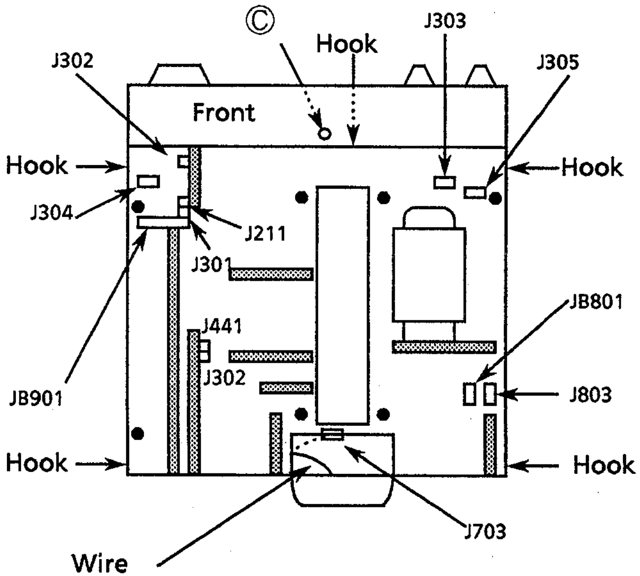


Figure 2 Top view

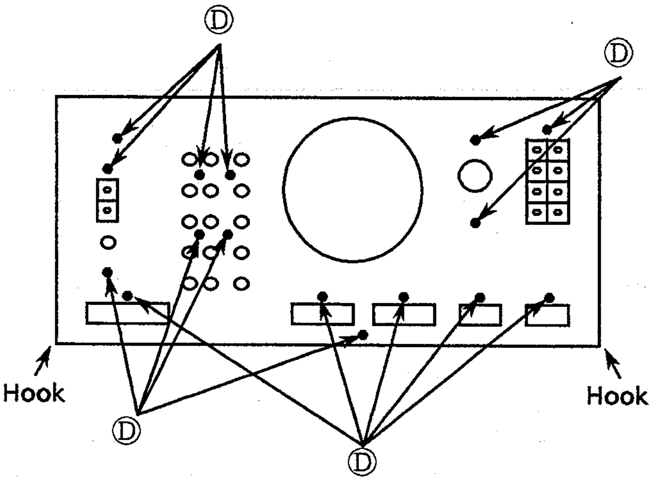


Figure 3 Rear panel

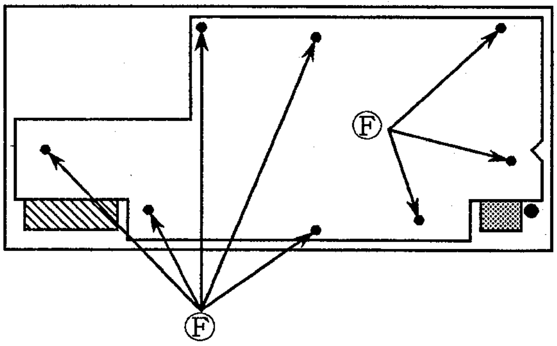
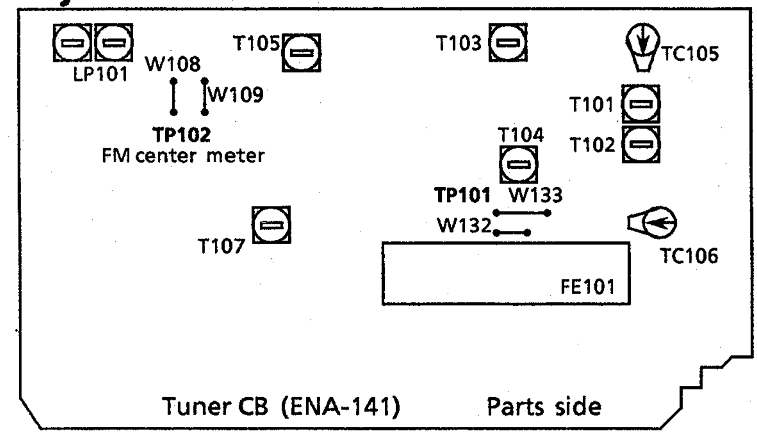


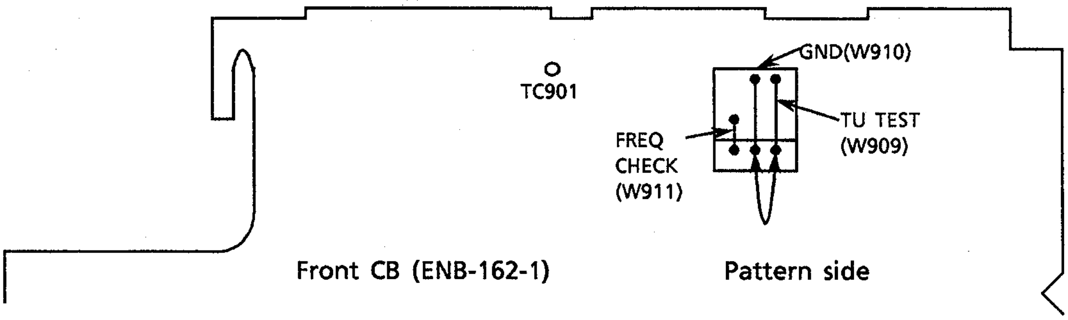
Figure 4 Behind the front panel assembly

Adjustment Procedures


LP101
W108
T105
T103
TC105
W109
T101
TP102
FM center meter
T104
T102
TP101
W133
W132
T107
TC106
FE101
Tuner CB (ENA-141)
Parts side

Clock Adjustment

1. After connecting W909 and W910 with some wire, connect ac power cord into ac outlet.
2. Confirm that the display is off and remove the wire.
3. Connect a frequency counter to W911 and W910.
4. Adjust TC901 so that the frequency becomes 34952.5±0.15Hz.


GND(W910)
TC901
TU TEST
(W909)
FREQ
CHECK
(W911)
Front CB (ENB-162-1)
Pattern side

(1) Tuning voltage

Confirm the voltages at TP101 is within the standard values shown in the table below. If the voltages are not satisfied, replace FE101 for FM, adjust T103 for MW and adjust T104 for LW.

FM Tuning voltage (Unit : V)

Area	Frequency			
	64.0MHz	74.0MHz	87.5MHz	108MHz
East Europe	—	—	—	—
the U.K., Continental Europe, U.S.A., Canada, Australia, Universal	—	—	1.6±1.0 (V)	8.0±2.0 (V)

AM Tuning voltage (Unit : V)

Area	Frequency (MW)							Frequency (LW)		
	522KHz	530KHz	531KHz	1600KHz	1602KHz	1629KHz	1710KHz	144kHz	290kHz	353kHz
Italy	0.9±0.2	—	—	—	—	7.5±0.8	—	0.8±0.1	5.7±0.5	—
the U.K., Continental Europe	0.9±0.2	—	—	—	—	7.5±0.8	—	0.8±0.1	—	8.0±0.9
U.S.A., Canada	—	1.0±0.2	—	—	—	—	8.0±0.8	—	—	—
Australia	0.9±0.2	—	—	—	—	7.5±0.8	—	—	—	—
Universal (Chanel space9kHz)	—	—	1.0±0.2	—	7.2±0.7	—	—	—	—	—
Universal (Chanel space10kHz)	—	1.0±0.2	—	7.2±0.7	—	—	—	—	—	—

(2) FM center meter

Receive a broadcast by using the function of 'AUTO STOP'.

Adjust T105 (detector coil) so that the voltage at TP102 becomes 0±1.5mV.

(3) MW Tracking

Adjust T101 (antenna coil) to obtain the best receiving sensitivity on 600kHz or 603kHz.

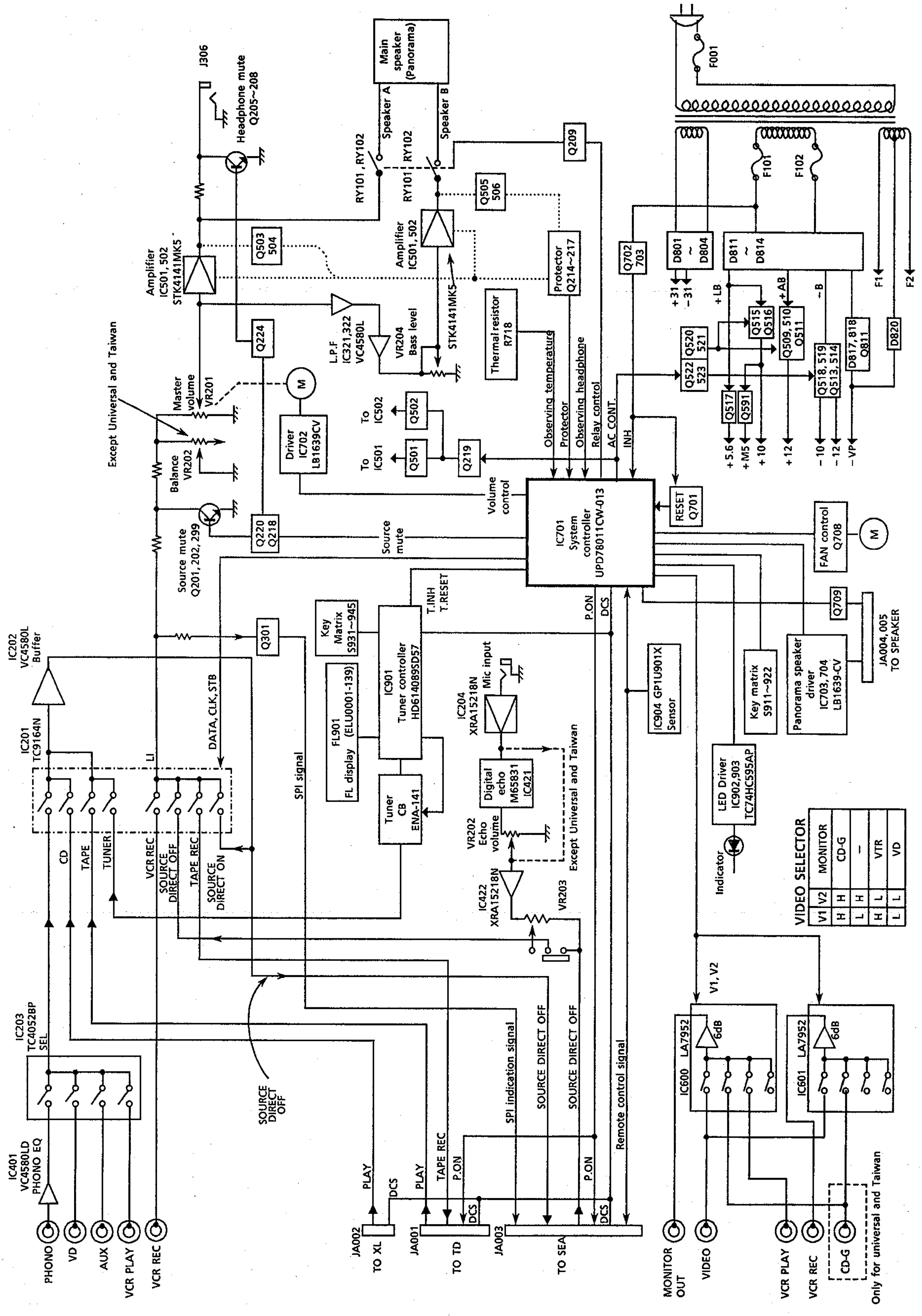
Adjust TC105 (antenna trimmer) to obtain the best receiving sensitivity on 1400kHz or 1404kHz.

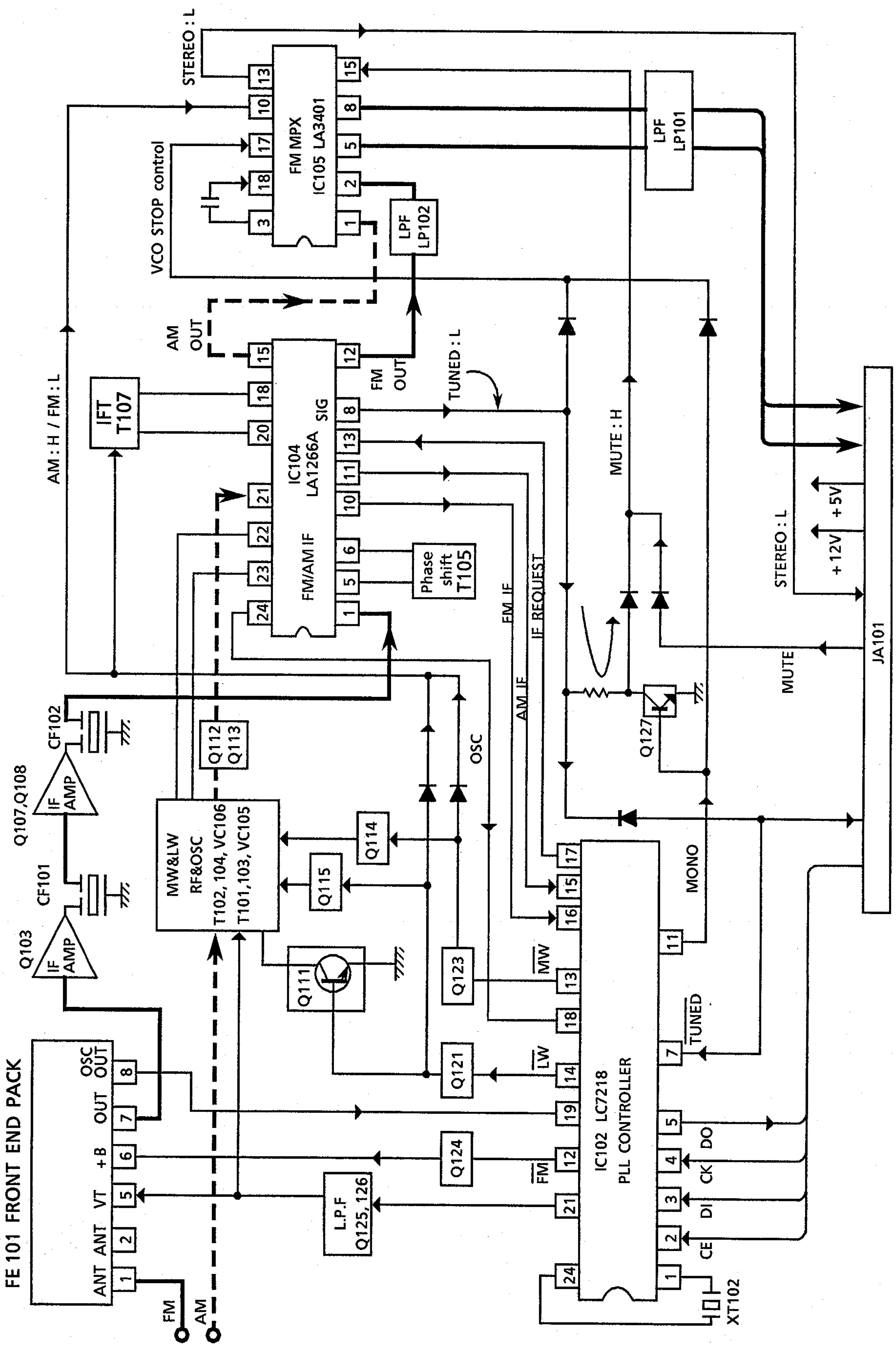
(4) LW Tracking

Adjust T102 (antenna coil) to obtain the best receiving sensitivity on 164kHz.

Adjust TC106 (antenna trimmer) to obtain the best receiving sensitivity on 353kHz or 245kHz.

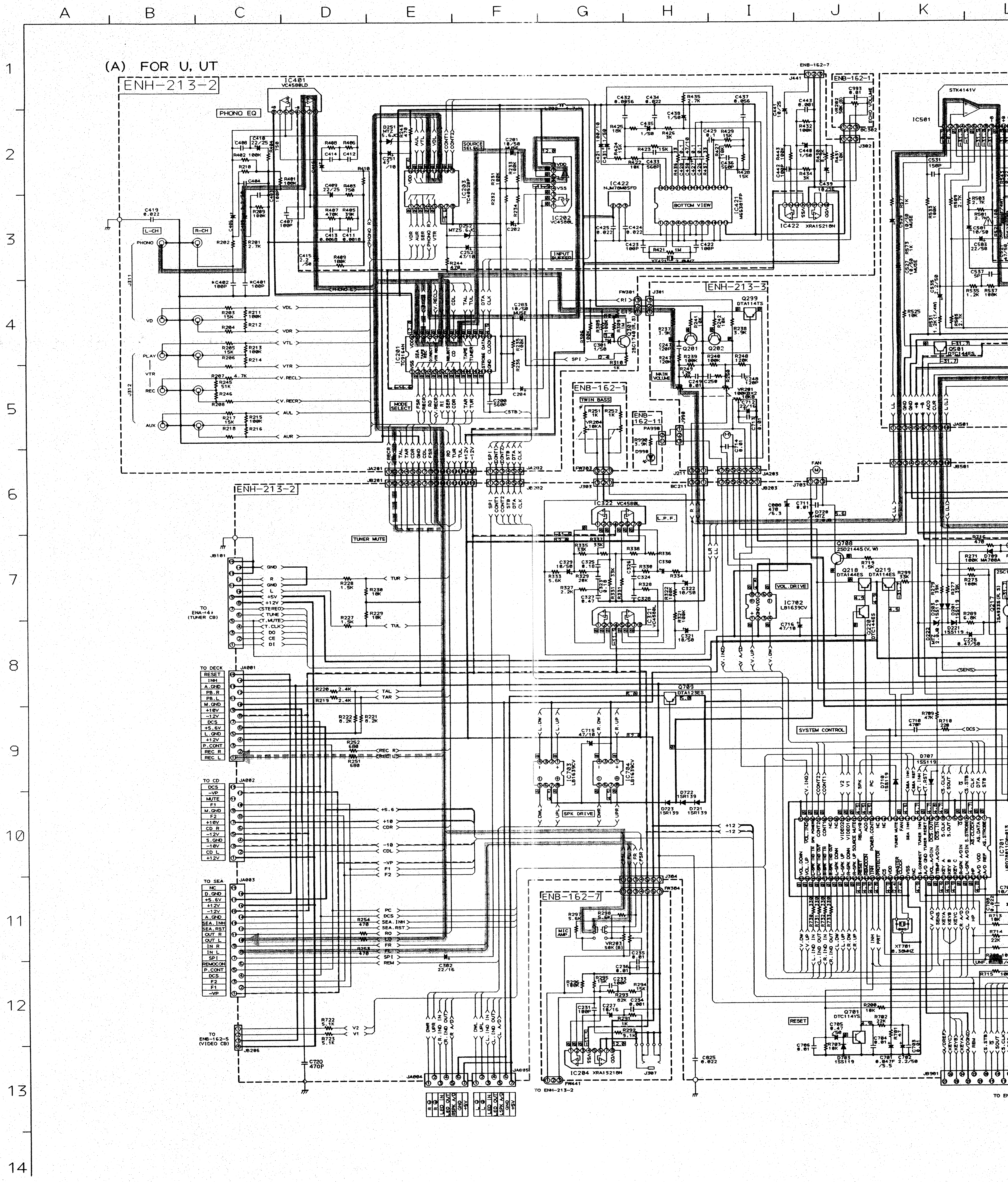
Block Diagram


J306
Headphone mute Q205~208
Main speaker (Panorama)
Speaker A
Speaker B
RY101, RY102
RY101 RY102
Q209
Q505 506
Amplifier IC501, 502 STK4141MK5
Q503 504
Protector Q214~217
Thermal resistor R718
L.P.F IC321,322 VC4580L
VR204 Bass level
STK4141MK5
Q224
Except Universal and Taiwan
Master volume VR201
Balance VR202
M
Driver IC702 LB1639CV
To IC502
To IC501
Q502
Q501
Q219
Volume control
Observing temperature
Protector
Observing headphone
Relay control
AC CONT.
INH
Q702 703
D801 ~ D804
D811 ~ D814
F001
F101
F102
+31
−31
+LB
+AB
−B
F1
F2
Q520 521
Q522 523
Q515 Q516
Q509, 510 Q511
Q518, 519 Q513, 514
D817, 818 Q811
D820
Q517
Q591
+5.6
+M5
+10
+12
−10
−12
−VP
IC701 System controller UPD78011CW-013
RESET Q701
FAN control Q708
Source mute Q201, 202, 299
Q220 Q218
Source mute
Q709
JA004, 005 TO SPEAKER
T.INH T.RESET
P.ON
DCS
Key Matrix S931~945
IC901 Tuner controller HD614089SD57
FL901 FL display (ELU0001-139)
Tuner CB ENA-141
IC904 GP1U901X Sensor
Key matrix S911~922
Panorama speaker driver IC703, 704 LB1639-CV
LED Driver IC902, 903 TC74HC595AP
Indicator
IC202 VC4580L Buffer
IC201 TC9164N
DATA, CLK, STB
LI
Q301
SPI signal
IC204 XRA15218N
Mic input
Digital echo M65831 IC421
Except Universal and Taiwan
VR202 Echo volume
IC422 XRA15218N
VR203
CD
TAPE
TUNER
VCR REC
SOURCE DIRECT OFF
TAPE REC
SOURCE DIRECT ON
VIDEO SELECTOR
V1 V2 MONITOR
H H CD-G
L H –
H L VTR
L L VD
V1, V2
IC203 TC4052BP SEL
SOURCE DIRECT OFF
SPI indication signal
SOURCE DIRECT OFF
SOURCE DIRECT OFF
Remote control signal
IC600 LA7952
IC601 LA7952
6dB
6dB
IC401 VC4580LD PHONO EQ
PLAY
DCS
PLAY
TAPE REC
P.ON
DCS
P.ON
DCS
PHONO
VD
AUX
VCR PLAY
VCR REC
JA002 TO XL
JA001 TO TD
JA003 TO SEA
MONITOR OUT
VIDEO
VCR PLAY
VCR REC
CD-G
Only for universal and Taiwan


FE 101 FRONT END PACK
ANT
ANT
VT
+B
OUT
OSC OUT
1
2
5
6
7
8
FM
AM
Q103
IF AMP
CF101
Q107,Q108
IF AMP
CF102
AM : H / FM : L
IFT T107
MW&LW RF&OSC T102, 104, VC106 T101,103, VC105
Q112 Q113
Q114
Q115
Q111
Q121
Q123
Q124
L.P.F Q125, 126
OSC
IC104 LA1266A FM/AM IF
SIG
AM OUT
FM OUT
Phase shift T105
TUNED : L
FM IF
AM IF
IF REQUEST
FM MPX IC105 LA3401
VCO STOP control
STEREO : L
LPF LP102
LPF LP101
MUTE : H
Q127
MUTE
MONO
STEREO : L
+12V
+5V
JA101
IC102 LC7218 PLL CONTROLLER
MW
LW
FM
TUNED
CE
DI
CK
DO
XT102

Schematic Diagrams

(1) Main, Input/Output & Power Amplifier Section (For Universal and Taiwan)



A
B
C
D
E
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G
H
I
J
K
1
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5
6
7
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9
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11
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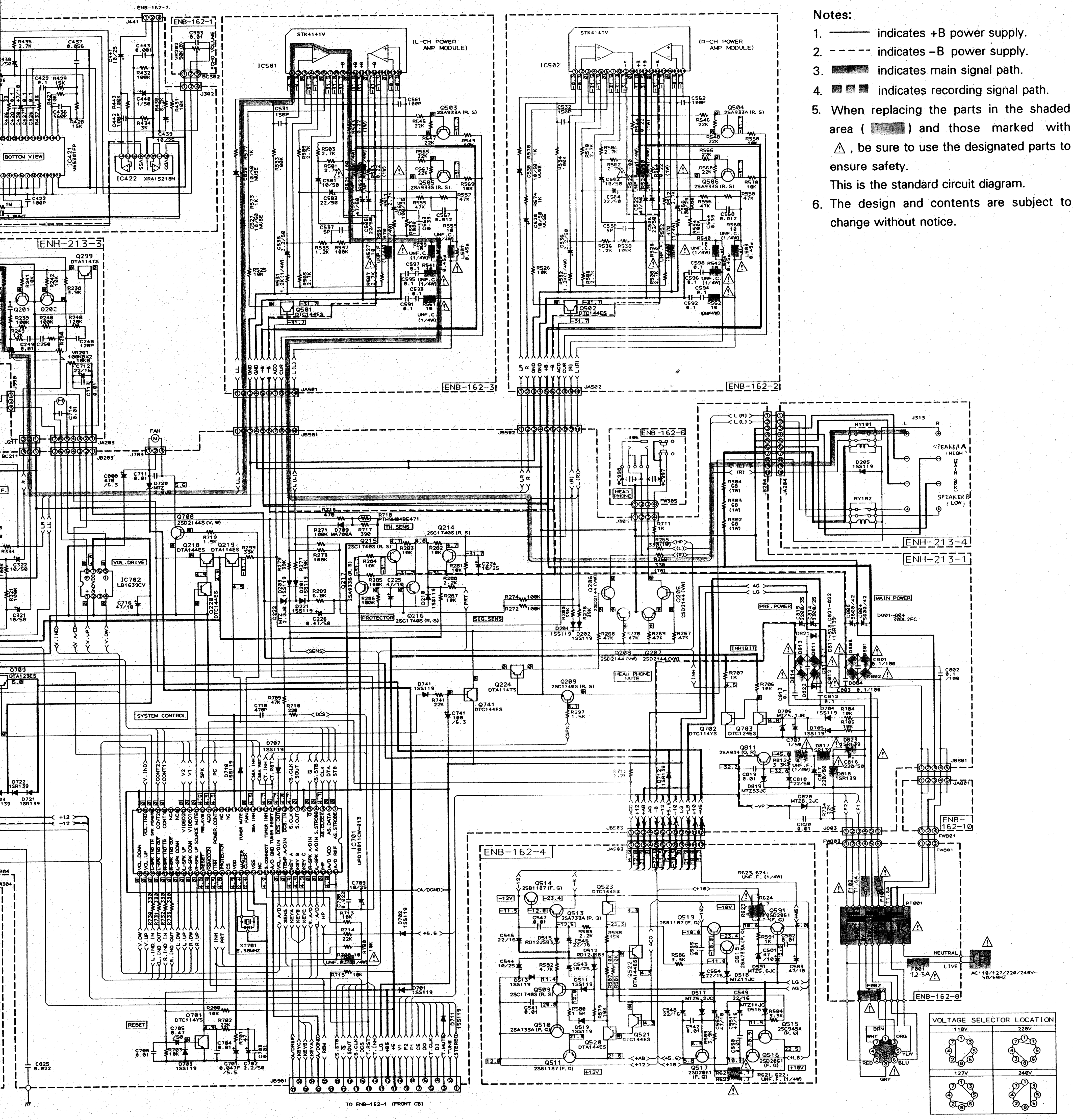
13
14
(A) FOR U, UT
ENH-213-2
IC401 VC4580LD
PHONO EQ
L-CH
R-CH
PHONO
VD
PLAY
VTR
REC
AUX
J311
J312
SOURCE SELECT
IC203
IC202 VC4580L
INPUT BUFFER
IC201
MODE SELECT
IC422 NJM78M05FD
IC421
BOTTOM VIEW
IC422 XRA15218N
ENB-162-7
ENB-162-1
ECHO VOLUME
ENH-213-3
Q299 DTA114TS
Q201
Q202
MAIN VOLUME
ENB-162-1
TWIN BASS
ENB-162-11
JA201
JB201
JA202
JB202
ENH-213-2
IC322 VC4580L
L.P.F.
IC321 VC4580L
TUNER MUTE
JB101
TO ENA-4+ (TUNER CB)
TO DECK
JA001
TO CD
JA002
TO SEA
JA003
TO ENB-162-5 (VIDEO CB)
JB206
C720 470P
JA004
JA005
IC703 LB1639CV
IC704 LB1639CV
SPK DRIVE
Q709 DTA123ES
D722 1SR139
D723 1SR139
D721 1SR139
ENB-162-7
MIC AMP
IC204 XRA15218N
TO ENH-213-2
FW441
J304
FW304
J307
IC702 LB1639CV
VOL DRIVE
FAN
J703
Q708 2SD2144S (V, W)
Q218 DTA144ES
Q219 DTA114ES
Q220 DTC144ES
SYSTEM CONTROL
Q701 DTC114YS
RESET
XT701 8.38MHZ
IC501
STK4141V
Q501 DTC144ES
JA501
JB501
JB901
IC701

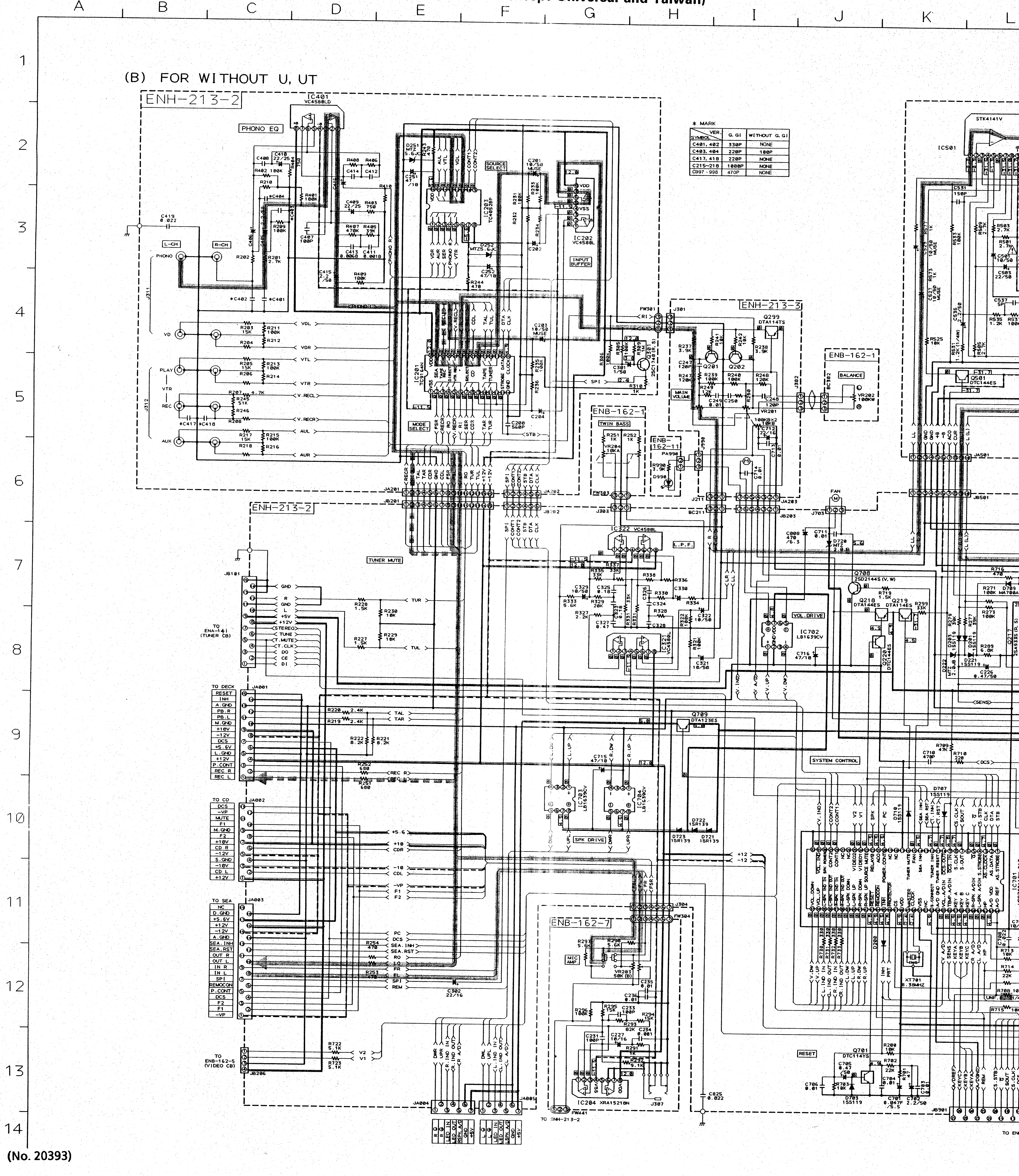
H I J K L M N O P Q R S T


ENB-162-7
ENB-162-1
ECHO VOLUME
BOTTOM VIEW
IC421 M65381FP
IC422 XRA15218N
STK4141V
IC501
(L-CH POWER AMP MODULE)
IC502
(R-CH POWER AMP MODULE)
ENB-162-3
ENB-162-2
ENH-213-3
Q299 DTA114TS
JA501
JA502
JB501
JB502
FAN
ENB-162-6
HEAD PHONE
J313
RY101
RY102
SPEAKER A (HIGH)
SPEAKER B (LOW)
ENH-213-4
ENH-213-1
VOL. DRIVE
IC702 LB1639CV
TH. SENS
PROTECTOR
SIG. SENS
MAIN POWER
PRE. POWER
INHIBIT
HEAD PHONE MUTE
SYSTEM CONTROL
IC701
XT701 8.38MHZ
RESET
TO ENB-162-1 (FRONT CB)
ENB-162-4
ENB-162-10
ENB-162-8
JB801
JA801
PT001
NEUTRAL
LIVE
F001 T2.5A
AC110/127/220/240V~ 50/60HZ
BRN
WHT
ORG
RED
BLU
YLW
GRY
VOLTAGE SELECTOR LOCATION
110V
220V
127V
240V

Notes:

1. ——— indicates +B power supply.
2. - - - - indicates −B power supply.
3. ▬ indicates main signal path.
4. ■ ■ ■ indicates recording signal path.
5. When replacing the parts in the shaded area (▨) and those marked with ⚠ , be sure to use the designated parts to ensure safety.
   This is the standard circuit diagram.
6. The design and contents are subject to change without notice.

(2) Main, Input/Output & Power Amplifier Section (For the versions except Universal and Taiwan)


A
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D
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F
G
H
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J
K
L
1
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4
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7
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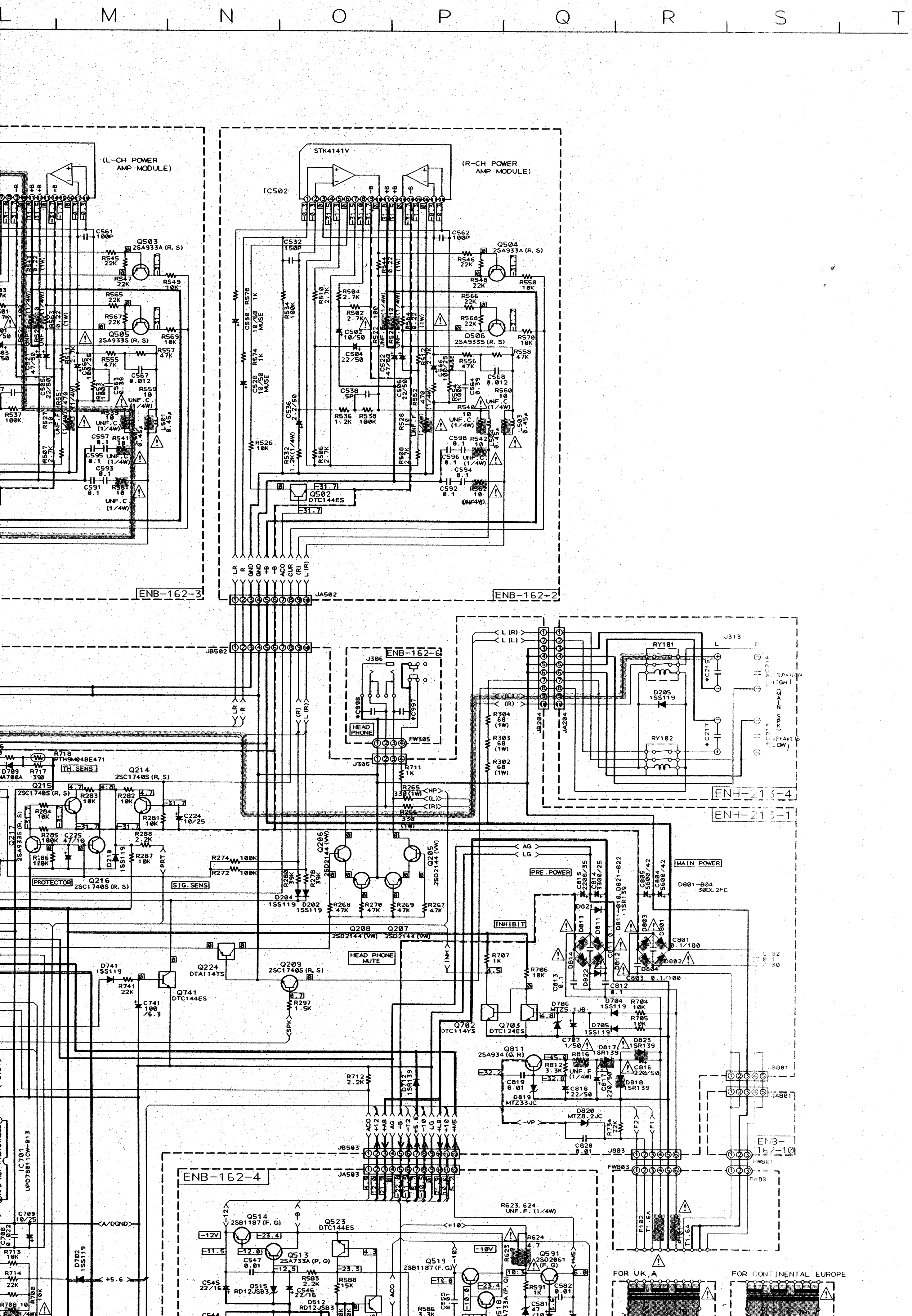
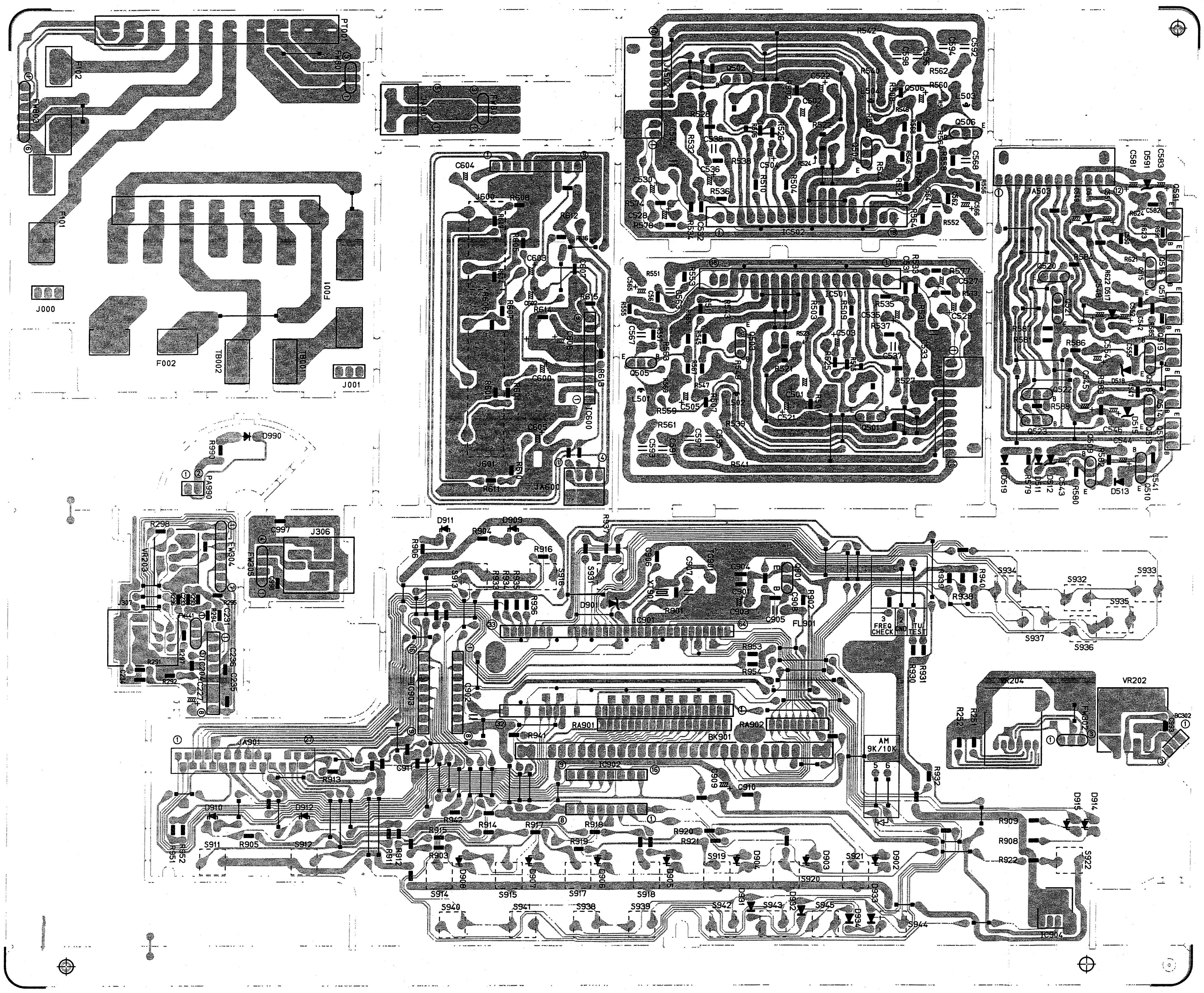
9
10
11
12
13
14
(B) FOR WITHOUT U, UT
ENH-213-2
IC401 VC4580LD
PHONO EQ
L-CH
R-CH
PHONO
J311
J312
VD
PLAY
VTR
REC
AUX
SOURCE SELECT
IC203 TC4052BP
IC202 VC4580L
INPUT BUFFER
IC201 TC9164N
MODE SELECT
ENH-213-3
Q299 DTA114TS
Q201
Q202
MAIN VOLUME
VR201
VR202 100KW
BALANCE
ENB-162-1
TWIN BASS
ENB-162-11
JA201
JB201
JA202
JB202
JA203
JB203
J301
J303
FW301
FW303
ENH-213-2
TUNER MUTE
JB101
TO ENA-141 (TUNER CB)
IC322 VC4580L
L.P.F.
IC321 VC4580L
TO DECK
JA001
TO CD
JA002
TO SEA
JA003
TO ENB-162-5 (VIDEO CB)
JB206
JA004
JA005
VOL.DRIVE
IC702 LB1639CV
Q709 DTA123ES
SYSTEM CONTROL
Q708 2SD2144S (V, W)
Q218 DTA144ES
Q219 DTA114ES
Q220 DTC144ES
FAN
J703
IC703 LB1639CV
IC704 LB1639CV
SPK DRIVE
ENB-162-7
MIC AMP
VR203 50K (B)
IC204 XRA15218N
J304
FW304
FW441
TO ENH-213-2
J307
RESET
Q701 DTC114YS
XT701 8.38MHZ
IC701
JB901
STK4141V
IC501
Q501 DTC144ES
JA501
JB501
TO EN

* MARK

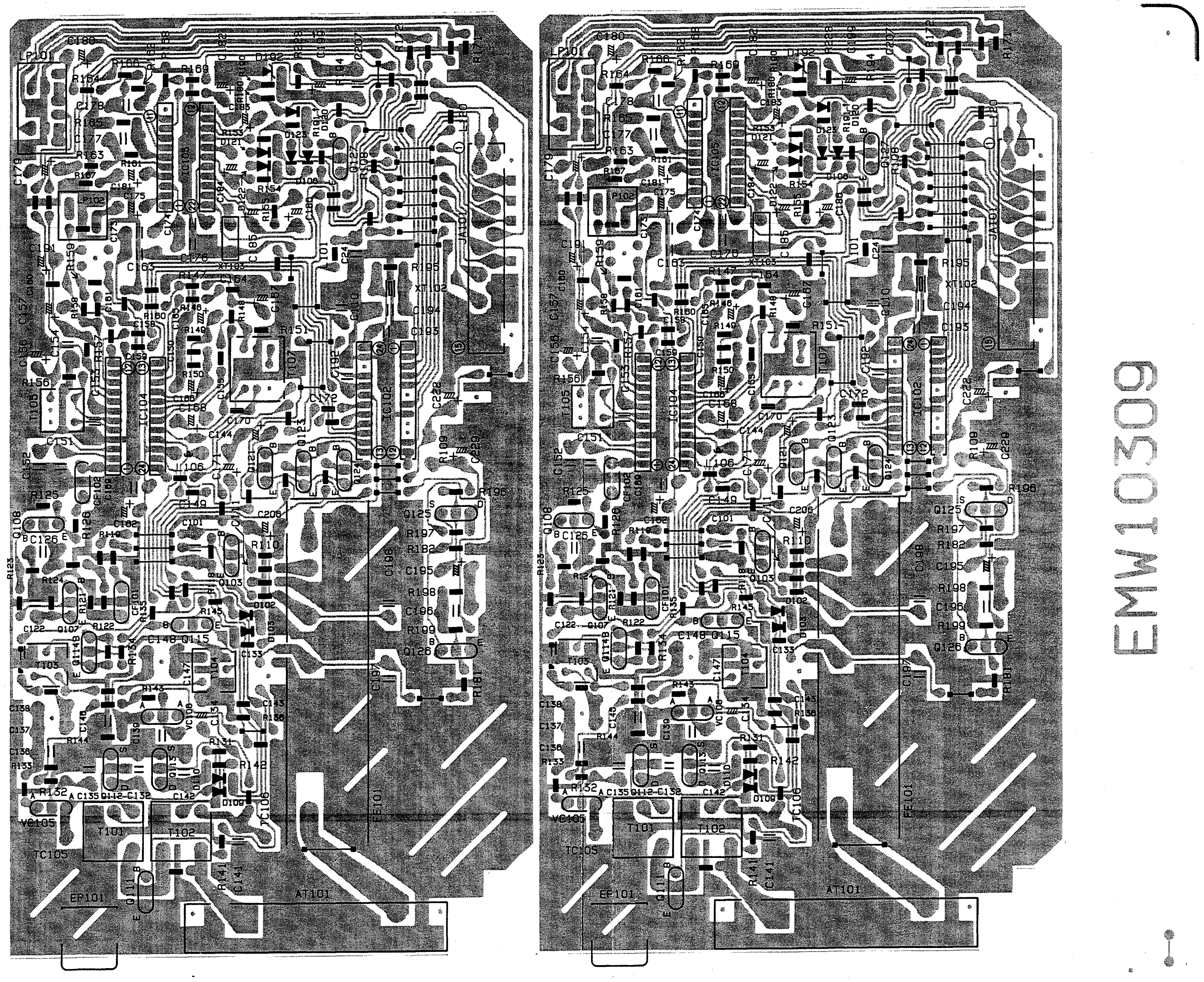
VER. / SYMBOL	G. GI	WITHOUT G. GI
C401, 402	330P	NONE
C403, 404	220P	100P
C417, 418	220P	NONE
C215~218	1000P	NONE
C997 - 998	470P	NONE


L
M
N
O
P
Q
R
S
T
(L-CH POWER AMP MODULE)
Q503 2SA933A (R, S)
R545 22K
R547 22K
R549 10K
C561 100P
R565 22K
R567 22K
Q505 2SA933S (R, S)
R569 10K
R557 47K
R555 47K
C567 0.012
R559 10
UNF.C. (1/4W)
R539 10
R537 100K
R527
R507 2.7K
C597 0.1
C595 0.1
R541
C593
C591 0.1
R561 10
L501 0.45μ
ENB-162-3
STK4141V
(R-CH POWER AMP MODULE)
IC502
C532 150P
C562 100P
Q504 2SA933A (R, S)
R546 22K
R548 22K
R550 10K
R544 0.22 (1W)
R578 1K
C530 10/50 MUSE
R534 100K
R510 2.7K
R504 2.7K
R502 2.7K
C502 10/50
C504 22/50
R522 100 UNF.F. (1/4W)
R524 10 UNF.F. (1/4W)
R564 0.22 (1W)
R566 22K
R568 22K
Q506 2SA933S (R, S)
R570 10K
R574 1K
C528 10/50 MUSE
C522 47/50
R512 2.7K
C566 100/25 MUSE
R556 47K
R558 47K
C568 0.012
C538 5P
C506 22/50
R552 470 (1/4W)
R554 100K
C564 0.39
R560 10 UNF.C. (1/4W)
C536 2.2/50
R536 1.2K
R538 100K
R528 10 UNF.F. (1/4W)
R540 10 UNF.C. (1/4W)
L504 0.45μ
L503 0.45μ
R526 10K
C598 0.1
R542 10
C596 0.1 UNF.C. (1/4W)
R532 1.2K (1/4W)
R506 2.7K
R508 2.7K
C594 0.1
C592 0.1
R562 10 (UNF4W)
Q502 DTC144ES
-31.7
LR R GND GND +B -B ACO CUR (R) L (R)
JA502
ENB-162-2
JB502
ENB-162-6
J306
*C998
*C997
HEAD PHONE
FW305
J305
R711 1K
R265 330 (1W)
R266 330 (1W)
<HP>
<(L)>
<(R)>
L (R)
L (L)
JB204
JA204
R304 68 (1W)
R303 68 (1W)
R302 68 (1W)
J313
RY101
*C215
D205 1SS119
RY102
*C217
SPEAKER A (HIGH)
MAIN SPK
SPEAKER B (LOW)
ENH-213-4
ENH-213-1
R718 PTH9M04BE471
D709 MA700A
R717 390
TH.SENS
Q214 2SC1740S (R, S)
Q215 2SC1740S (R, S)
R283
R282 10K
R281 10K
C224 10/25
R284 10K
Q217 2SA933S (R, S)
R285 100K
C225 47/10
R286 100K
D210 1SS119
R288 2.2K
R287 10K
PRT
PROTECTOR
Q216 2SC1740S (R, S)
R274 100K
R272 100K
SIG.SENS
Q206 2SD2144 (VW)
Q205 2SD2144 (VW)
R280 39K
R278 39K
D204 1SS119
D202 1SS119
R268 47K
R270 47K
R269 47K
R267 47K
Q208 2SD2144 (VW)
Q207 2SD2144 (VW)
HEAD PHONE MUTE
Q224 DTA114TS
Q209 2SC1740S (R, S)
R297 1.5K
SPK
D741 1SS119
R741 22K
C741 100 /6.3
Q741 DTC144ES
INH
AG
LG
PRE.POWER
C815 2200/35
C814 3300/25
D811~818, D821~822 1SR139
D821
D813
D811
D814
D822
D812
C811 0.1
C813 0.1
C812 0.1
MAIN POWER
C805 5600/42
C804 5600/42
D801~804 30DL2FC
D803
D801
C801 0.1/100
D802
D804
C803 0.1/100
C802 0.1/100
INHIBIT
R707 1K
R706 10K
Q702 DTC114YS
Q703 DTC124ES
D706 MTZ5.1JB
D704 1SS119
R704 10K
R705 10K
D705 1SS119
C707 1/50
D817 1SR139
D823 1SR139
Q811 2SA934 (Q, R)
R816 UNF.F. (1/4W)
R812 3.3K
C816 220/50
C817 220/50
D818 1SR139
C819 0.01
C818 22/50
D819 MTZ33JC
-VP
D820 MTZ8.2JC
R734 22K
C820 0.01
F2
F1
J803
FW803
JB801
JA801
ENB-162-10
FW801
F102 T1.6A
F101 T1.6A
R712 2.2K
D712 1SR139
ACO +12 +AB AG -B -12 +5.6 -10 LG +LB +10 +M5
JB503
JA503
ENB-162-4
R623, 624, UNF.F. (1/4W)
Q514 2SB1187 (F, G)
Q523 DTC144ES
-12V
-11.5
Q513 2SA733A (P, Q)
C547 0.01
C545 22/16
D515 RD12JSB3
R583 2.2K
C546 22/16
R588 15K
D512 RD12JSB3
C544 10/25
R582 4.7K
C543 10/26
D513 1SS119
D511 1SS119
Q522 DTA144ES
Q509 2SC1740S (R, S)
C541 0.01
R580 1.5K
R579 10K
R587 10K
R581 10K
D519 1SS119
Q510 2SA733A (P, Q)
Q520 DTA144ES
Q521 DTC144ES
Q511 2SB1187 (F, G)
+12V
<+10>
R624 4.7
R623
Q591 2SD2061 (F, G)
-10V
Q519 2SB1187 (F, G)
C555 0.01
Q518 2SA733A (P, Q)
R586 3.3K
R591 1K
C582 0.01
C581 47 /10
D591 MTZ5.6JC
C583 47/10
C554 22/16
D518 MTZ11JC
D517 MTZ6.2JC
C549 22/16
C548 22/16
C542 0.01
R585 3.9K
C552 47/10
C551 47/16
D516 MTZ11JC
R584 3.3K
Q515 2SC945A (P, Q)
C550 0.01
Q516 2SD2061 (F, G)
Q517 2SD1944 (J, K)
R621, 622, UNF.F. (1/4W)
+10V
<+LB>
<+5.6>
<+10>
<+AB>
<+12>
<A/DGND>
<+5.6>
IC701 UPD7801ICW-013
C709 10/25
R713 10K
R714 22K
R708 10
D702 1SS119
D701 1SS119
D711 1SS119
STEREO
TUNE
MUTE
T.CLK
DO
CE
F1
F2
+5
+B5
LG
T.INH
RST
DCS
S.CLK
SOUT
TO ENB-162-1 (FRONT CB)
FOR UK, A
240V
TH. FUSE
F001 T1.25A
ENB-162-8
AC240V 50HZ
FOR CONTINENTAL EUROPE
230V
AC230V 50HZ

(2) Front, Power Supply & Amplifier CB (ENB-162)

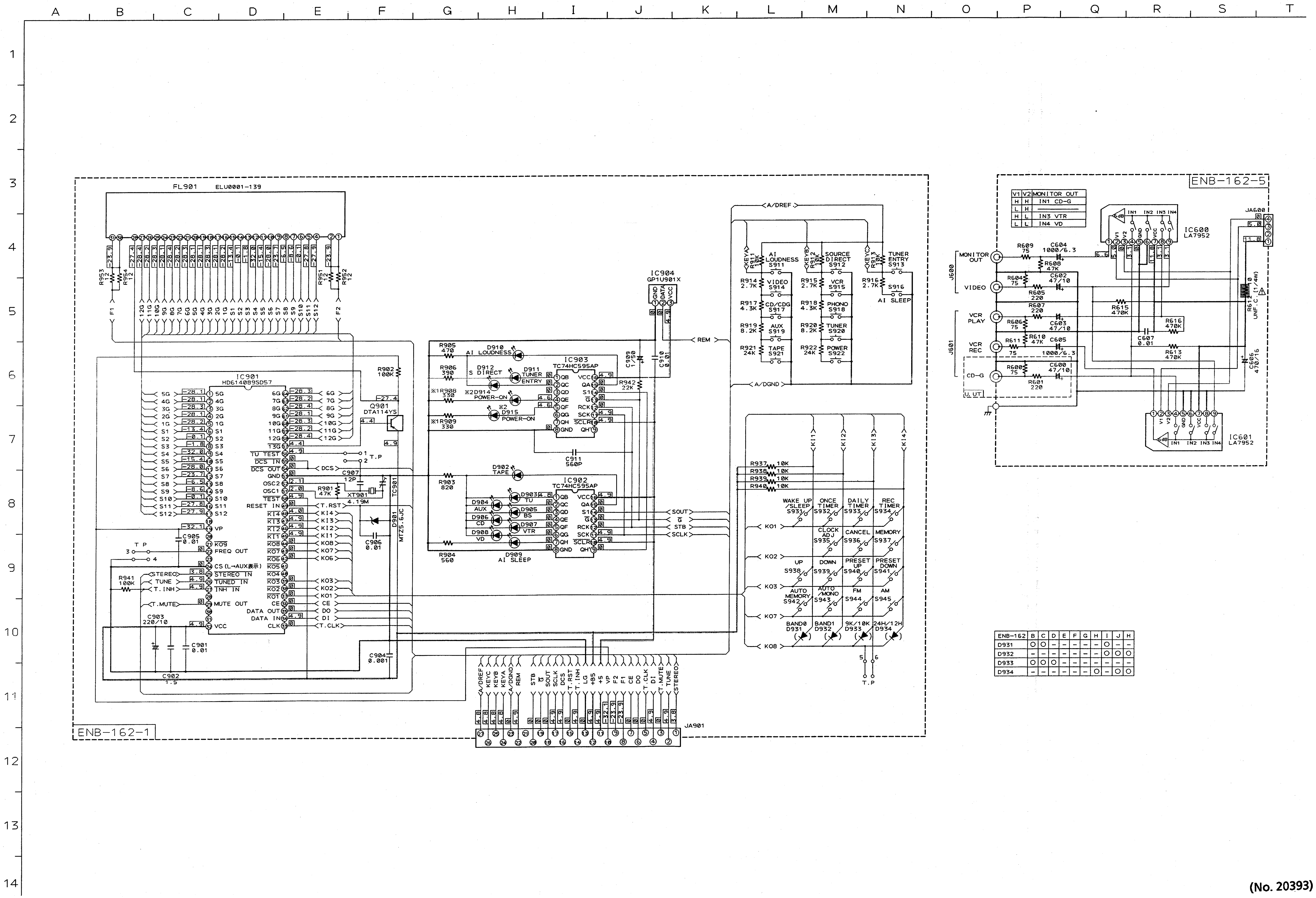

PT001
F102
FW003
F101
F001
J000
F002
TB002
TB001
J001
D990
R990
PA990
C604
J600
R612
C603
R615
C600
R616
IC600
J601
R611
JA600
R542
C592
C594
R562
R560
Q506
C568
R536
C530
C528
R574
R578
IC502
R552
R551
C565
R555
C567
C505
L501
R559
R561
IC501
R535
R537
C529
R527
R541
JA503
C581
D591
C583
R624
C582
R621
R622
Q520
R586
R589
Q522
Q523
C546
C544
D519
R579
D513
C541
C510
R298
VR203
FW304
J307
C997
J306
FW305
R291
R297
R292
C236
C235
C227
D911
R904
D909
R906
R916
S916
S913
S931
D901
IC901
R901
C904
Q901
C905
FL901
R902
C908
R939
R940
S934
S932
S933
R938
S935
S937
S936
3 FREQ CHECK
2 GND
1 TU TEST
R931
R930
R953
R954
VR204
VR202
R252
R251
BC302
FW302
RA901
RA902
BK901
R941
JA901
R913
C911
IC902
C909
C910
AM 9K/10K
R932
D915
D914
D910
D912
R942
R914
R917
R918
R915
R919
R920
R921
R903
R905
S911
S912
R911
R912
R951
R952
S919
D904
D903
S921
D902
R909
R908
R922
S922
D908
D907
D906
D905
S920
S914
S915
S917
S918
S940
S941
S938
S939
S942
D931
S943
D932
S945
D933
D934
S944
IC904

(3) Tuner CB (ENA-141)


EMW10309
IC101
IC102
IC104
IC105
IC106
LP101
LP102
T101
T102
T105
TC105
VC105
EP101
AT101
FE101
XT102
Q101
Q102
Q103
Q107
Q108
Q111
Q114
Q115
Q123
Q125
Q126
D101
D102
D103
D105
D109
D110
D112
D121
D122
D123
D125
L105
L106
L107
CF101
CF102

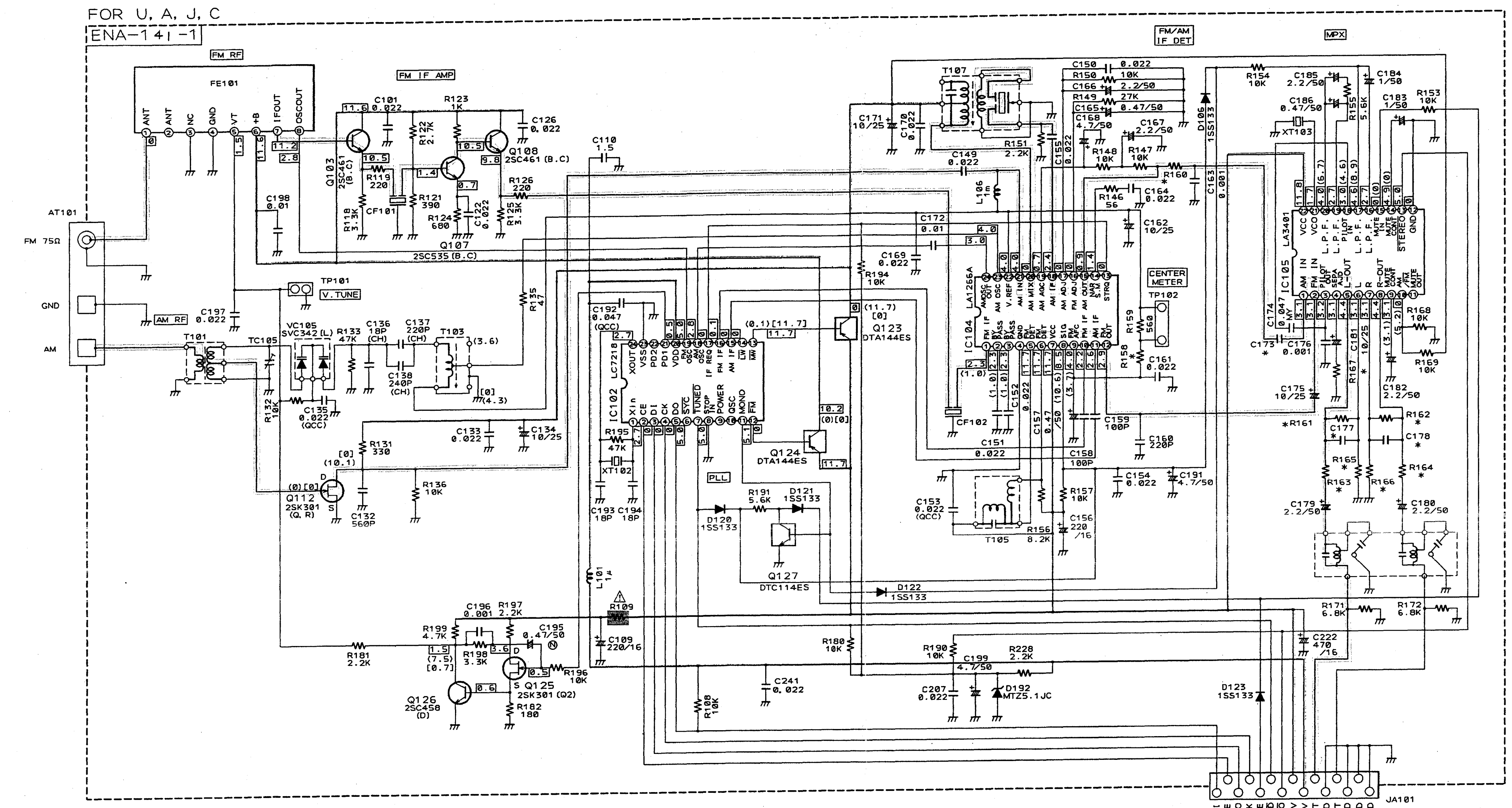
803

(3) Front Section


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
1
2
3
4
5
6
7
8
9
10
11
12
13
14
FL901 ELU0001-139
IC901 HD6140B9SD57
IC902 TC74HC595AP
IC903 TC74HC595AP
IC904 GP1U901X
Q901 DTA114YS
XT901 4.19M
D901 MTZ5.6JC
TC901
JA901
ENB-162-1
ENB-162-5
IC600 LA7952
IC601 LA7952
JA600
J600
J601
MONITOR OUT
VIDEO
VCR PLAY
VCR REC
CD-G
U.UT
V1 V2 MONITOR OUT
H H IN1 CD-G
L H
H L IN3 VTR
L L IN4 VD
D910 AI LOUDNESS
D911 TUNER ENTRY
D912 S DIRECT
D914 POWER-ON
D915 POWER-ON
D902 TAPE
D903 TU
D904 AUX
D905 BS
D906 CD
D907 VTR
D908 VD
D909 AI SLEEP
S911 AI LOUDNESS
S912 SOURCE DIRECT
S913 TUNER ENTRY
S914 VIDEO
S915 VCR
S916 AI SLEEP
S917 CD/CDG
S918 PHONO
S919 AUX
S920 TUNER
S921 TAPE
S922 POWER
S931 WAKE UP /SLEEP
S932 ONCE TIMER
S933 DAILY TIMER
S934 REC TIMER
S935 CLOCK ADJ
S936 CANCEL
S937 MEMORY
S938 UP
S939 DOWN
S940 PRESET UP
S941 PRESET DOWN
S942 AUTO MEMORY
S943 AUTO /MONO
S944 FM
S945 AM
D931 BAND0
D932 BAND1
D933 9K/10K
D934 24H/12H
A/DREF
A/DGND
REM
SOUT
STB
SCLK
KI1
KI2
KI3
KI4
KO1
KO2
KO3
KO7
KO8
T.P
(No. 20393)

ENB-162	B	C	D	E	F	G	H	I	J	H
D931	○	○	–	–	–	–	–	○	–	–
D932	–	–	–	–	–	–	–	○	○	○
D933	○	○	○	–	–	–	–	–	–	–
D934	–	–	–	–	–	–	○	–	○	○

(4) Tuner Section (without LW)

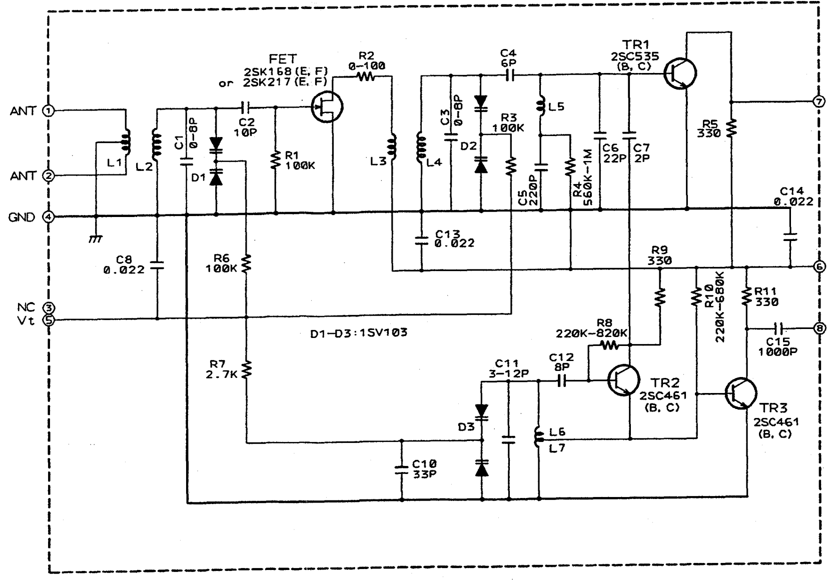

A B C D E F G H I J K L M N O P Q R S T
1 2 3 4 5 6 7 8 9 10 11 12 13 14
FOR U, A, J, C
ENA-141-1
FM RF
FE101
ANT ANT NC GND VT +B IFOUT OSCOUT
AT101
FM 75Ω
GND
AM
FM IF AMP
Q103 2SC461 (B.C)
Q108 2SC461 (B.C)
Q107 2SC535 (B.C)
C101 0.022
R123 1K
C126 0.022
C110 1.5
R119 220
R121 390
R124 600
R126 220
R125 3.3K
R118 3.3K
CF101
C198 0.01
TP101
V.TUNE
C197 0.022
AM RF
T101
TC105
VC105 SVC342(L)
R133 47K
C136 18P (CH)
C137 220P (CH)
T103
C138 240P (CH)
C135 0.022 (QCC)
R132 10K
R135 47
R131 330
R136 10K
C133 0.022
C134 10/25
Q112 2SK301 (Q,R)
C132 560P
C192 0.047 (QCC)
IC102 LC7218
XT102
R195 47K
C193 18P
C194 18P
L101 1μ
R109
C109 220/16
Q123 DTA144ES
Q124 DTA144ES
PLL
R191 5.6K
D121 1SS133
D120 1SS133
Q127 DTC114ES
D122 1SS133
C196 0.001
R197 2.2K
R199 4.7K
C195 0.47/50
R198 3.3K
R196 10K
R181 2.2K
Q126 2SC458 (D)
Q125 2SK301 (Q2)
R182 180
R180 10K
R189 10K
C241 0.022
FM/AM IF DET
T107
C150 0.022
R150 10K
C166 2.2/50
R149 27K
C165 0.47/50
C168 4.7/50
C167 2.2/50
C171 10/25
C170 0.022
C149 0.022
R151 2.2K
R148 10K
R147 10K
R146 56
C164 0.022
L106
C172 0.01
C169 0.022
R194 10K
IC104 LA1266A
CF102
C151 0.022
C157
C153 0.022 (QCC)
T105
R156 8.2K
R157 10K
C156 220/16
C158 100P
C159 100P
C160 220P
C154 0.022
C191 4.7/50
CENTER METER
TP102
R159 560
R158
C161 0.022
C162 10/25
C163 0.001
D106 1SS133
R160
MPX
R154 10K
C185 2.2/50
C184 1/50
C186 0.47/50
XT103
R155 5.6K
C183 1/50
R153 10K
IC105 LA3401
C174 0.047
C173
C176 0.001
C181 10/25
R167
R168 10K
R169 10K
C175 10/25
C182 2.2/50
R161
C177
R162
C178
R165
R163
R166
R164
C179 2.2/50
C180 2.2/50
R171 6.8K
R172 6.8K
C222 470 /16
D123 1SS133
R190 10K
C199 4.7/50
R228 2.2K
C207 0.022
D192 MTZ5.1JC
JA101
DI CE DO CK MUTE TUNED STEREO +12V +5V L OUT R OUT GND GND GND

* MARK

	U	A	J. C
R109	68 UNF.F. (1/4W)	68 UNF.F (1/4W)	68 UNF.C. (1/4W)
R167	39K	47K	39K
R160	5.6K	10K	5.6K
R161, 162	82K	100K	82K
R163, 164	4.7K	3.3K	4.7K
R165, 166	180K	270K	180K
C177, 178	820P	560P	820P
R158	27K	27K	18K
C173	0.039	0.022	0.039

▭ FM AUTO NO SIGNAL
( ) MW NO SIGNAL
[ ] LW NO SIGNAL

FE101
EAF2203-001


ANT
ANT
GND
NC
Vt
FET
2SK168 (E, F)
or 2SK217 (E, F)
R2 0-100
C4 6P
TR1 2SC535 (B, C)
IF OUT
C2 10P
C1 0-8P
R1 100K
L1
L2
D1
L3
L4
C3 0-8P
D2
R3 100K
L5
C5 22P
R4 560K-1M
C6 22P
C7 2P
R5 330
C14 0.022
C8 0.022
R6 100K
C13 0.022
R9 330
+B
R10 220K-680K
R11 330
OSC OUT
C15 1000P
D1-D3:1SV103
R8 220K-820K
R7 2.7K
C11 3-12P
C12 8P
TR2 2SC461 (B, C)
TR3 2SC461 (B, C)
D3
L6
L7
C10 33P

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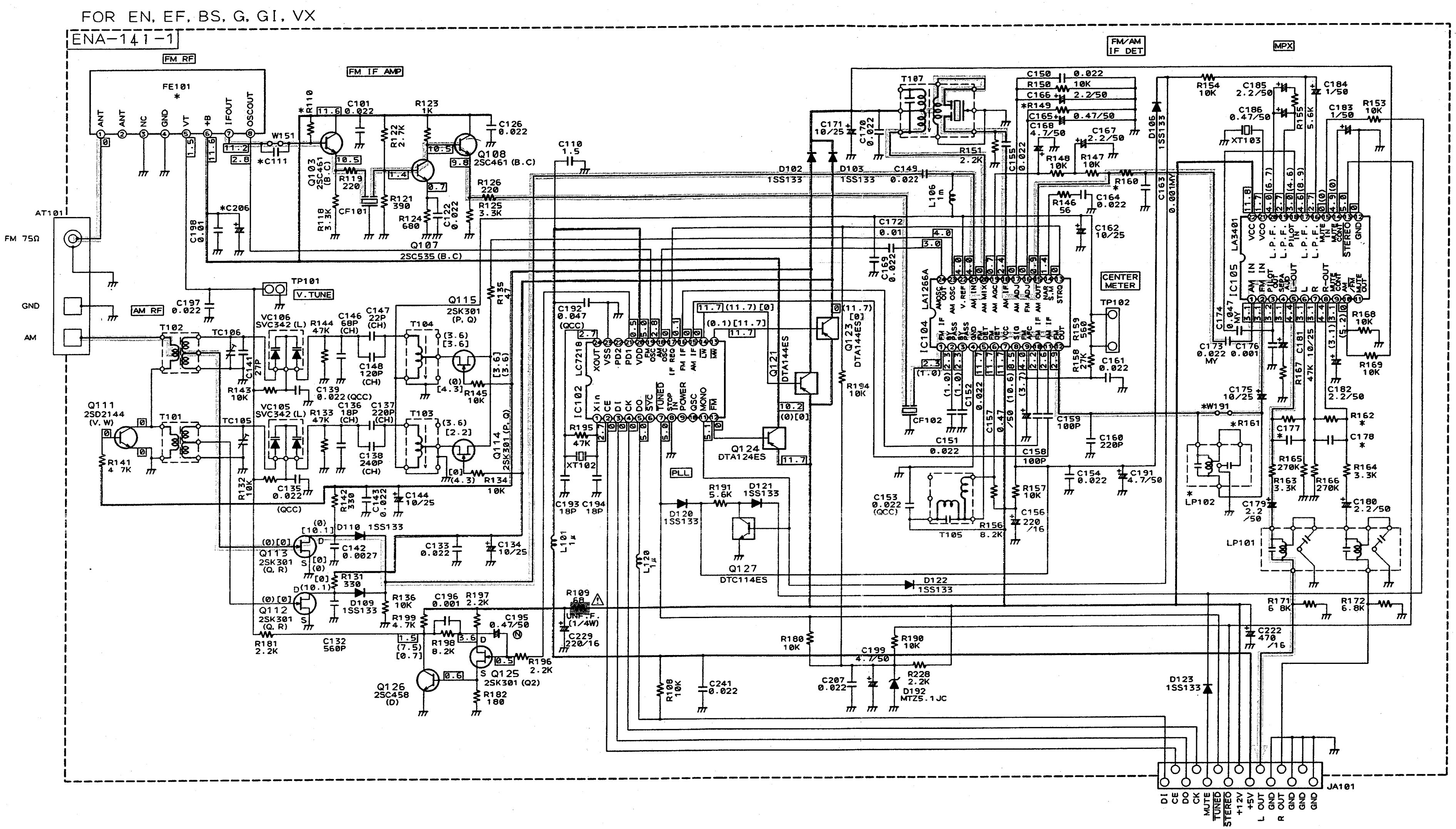
(5) Tuner Section (with LW)

A B C D E F G H I J K L M N O P Q R S T

1 2 3 4 5 6 7 8 9 10 11 12 13 14

FOR EN, EF, BS, G, GI, VX

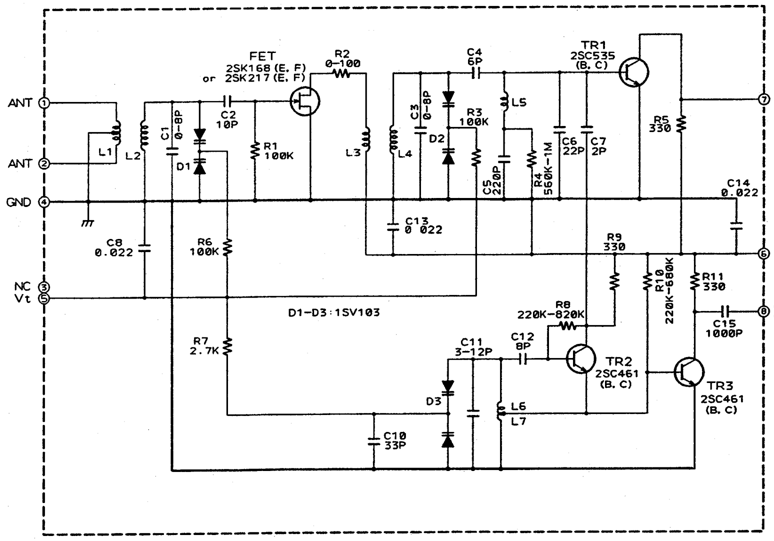

ENA-141-1
FM RF
FE101
FM IF AMP
AT101
FM 75Ω
GND
AM
AM RF
TP101
V.TUNE
T102
T101
TC106
TC105
VC106 SVC342(L)
VC105 SVC342(L)
Q111 2SD2144 (V.W)
Q115 2SK301 (P.Q)
Q114 2SK301 (P.Q)
Q113 2SK301 (Q.R)
Q112 2SK301 (Q.R)
Q103 2SC461 (B.C)
Q108 2SC461 (B.C)
Q107 2SC535 (B.C)
T104
T103
IC102 LC7218
XT102
PLL
Q121 DTA144ES
Q123 DTA144ES
Q124 DTA124ES
Q127 DTC114ES
Q125 2SK301 (Q2)
Q126 2SC458 (D)
D120 1SS133
D121 1SS133
D122 1SS133
D102 1SS133
D103 1SS133
D109 1SS133
D110 1SS133
D123 1SS133
D192 MTZ5.1JC
D106 1SS133
FM/AM IF DET
T107
IC104 LA1266A
T105
CF101
CF102
CENTER METER
TP102
MPX
IC105 LA3401
XT103
LP102
LP101
R109 UNF-F (1/4W)
JA101
DI CE DO CK MUTE TUNED STEREO +5V +12V L OUT GND R OUT GND GND

* MARK

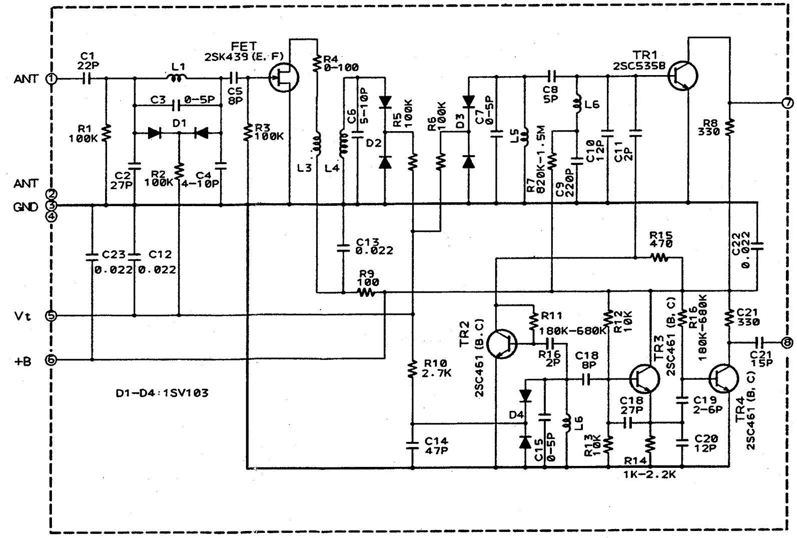
	EN, EF	G, GI	BS	VX
R160	10K	10K	1K	10K
R161, 162	100K	100K	68K	100K
C177, 178	560P	560P	820P	560P
FE101	EAF2203-001	EAF2203-003	EAF2203-001	EAF2302-001
LP102	NONE	USED	NONE	NONE
W191	USED	NONE	USED	USED
R149	22K	27K	22K	15K
R110	NONE	NONE	NONE	47K
C111	NONE	NONE	NONE	0.01
W151	USED	USED	USED	NONE
C107	NONE	47/50	NONE	NONE

▭ FM AUTO NO SIGNAL
( ) MW NO SIGNAL
[ ] LW NO SIGNAL

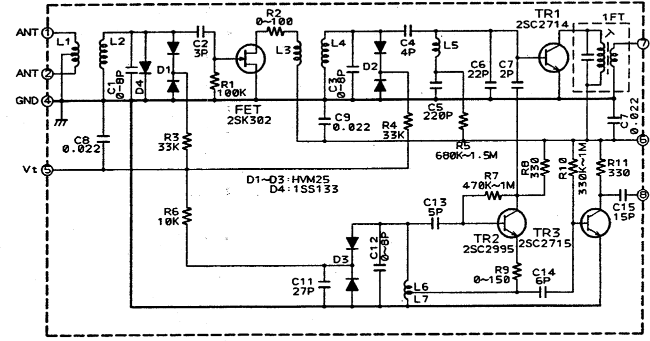
FE101
EAF2203-001 (FOR EN, EF, BS)


ANT
ANT
GND
NC
Vt
FET 2SK168 (E, F) or 2SK217 (E, F)
TR1 2SC535 (B, C)
TR2 2SC461 (B, C)
TR3 2SC461 (B, C)
D1-D3: 1SV103
IF OUT
+B
OSC OUT

FE101
EAF2203-003 (FOR G, GI)

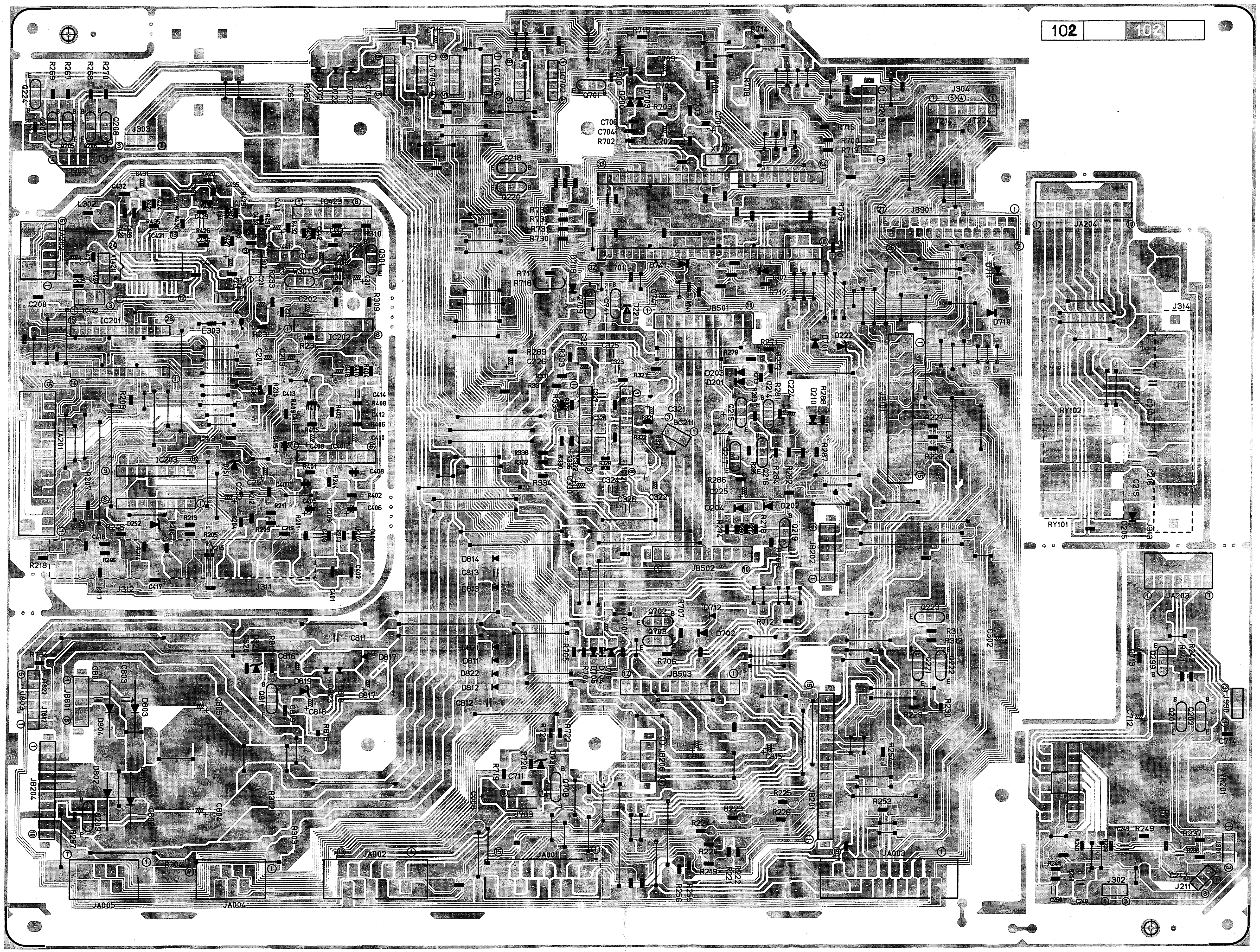

ANT
ANT
GND
Vt
+B
FET 2SK439 (E, F)
TR1 2SC535B
TR2 2SC461 (B, C)
TR3 2SC461 (B, C)
TR4 2SC461 (B, C)
D1-D4: 1SV103
IF OUT
OSC OUT

FE101
EAF2302-001 (FOR VX)


ANT
ANT
GND
Vt
FET 2SK302
TR1 2SC2714
TR2 2SC2995
TR3 2SC2715
D1~D3: HVM25
D4: 1SS133
IFT
IF OUT
+B
OSC OUT

Printed Circuit Boards

(1) Main, Source Selector & Volume CB (ENH-213)


102
IC201
IC202
IC203
IC401
IC421
IC422
IC701
IC702
IC703
IC704
JB101
JB201
JB202
JB203
JB204
JB501
JB502
JB503
JB801
JB901
JA001
JA002
JA003
JA004
JA005
JA201
JA202
JA203
JA204
J211
J302
J303
J304
J305
J311
J312
J313
J314
J703
J803
RY101
RY102
VR201
L302
L303
BC211

PARTS LIST

Note : All printed circuit boards and its assemblies are not available as service parts.

Contents

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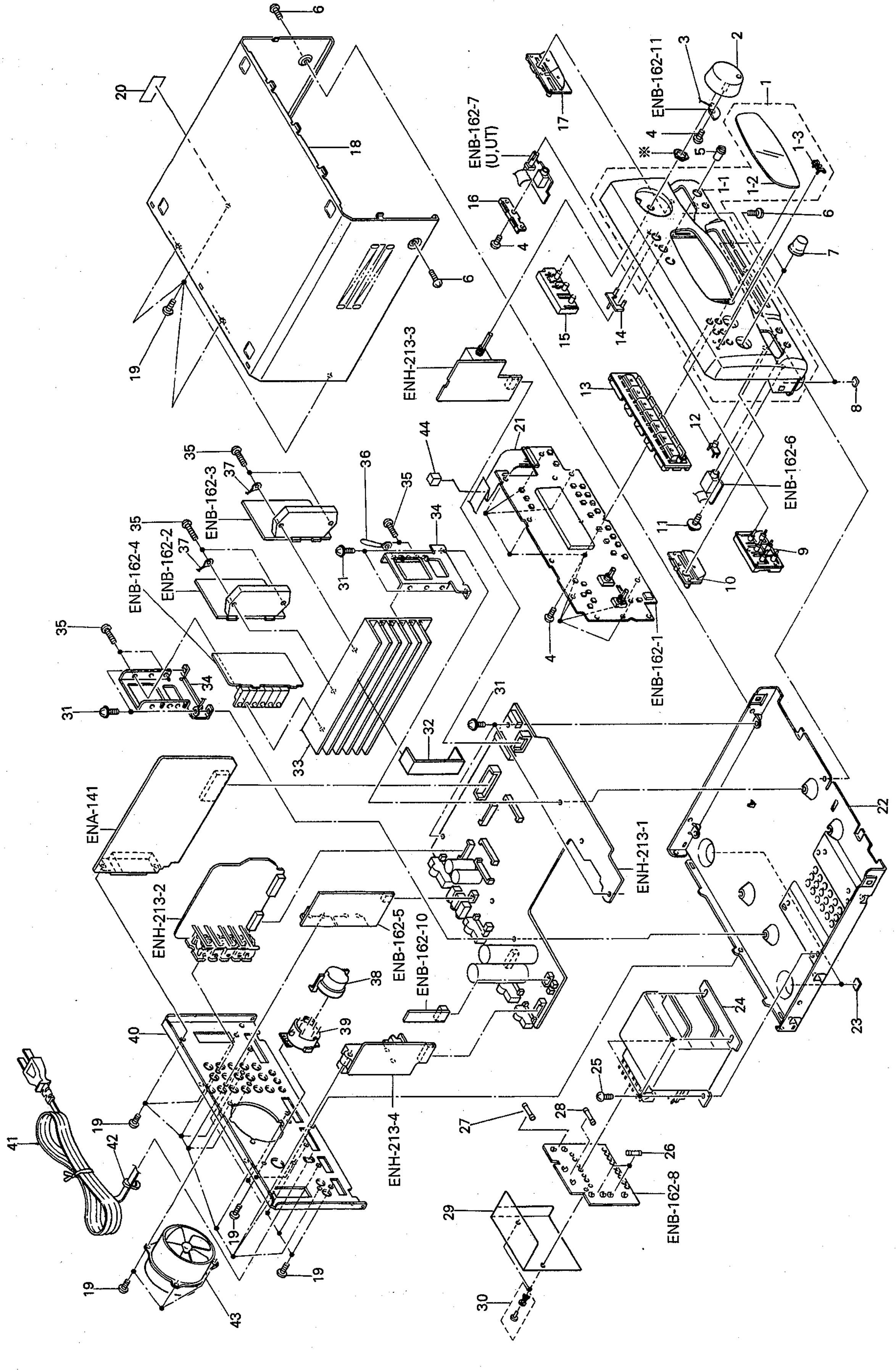
Printed Circuit Board Ass'y and Parts List 2-6
■ENH-213 ☐ Main, Source Select & Volume PC Board Ass'y 2-6
■ENB-162 ☐ Front, Power Supply & Amplifier PC Board Ass'y 2-10
■ENA-141 ☐ Tuner PC Board Ass'y 2-14
Accessories List 2-17
Packing Materials and Part Numbers 2-18

General Exploded View and Parts List


1
1-1
1-2
1-3
2
3
ENB-162-11
※
4
5
6
7
8
17
ENB-162-7
(U,UT)
16
4
18
20
6
6
19
14
15
ENH-213-3
13
12
ENB-162-6
11
9
10
21
44
36
35
34
31
35
37
ENB-162-3
35
37
ENB-162-2
ENB-162-4
35
34
31
33
32
31
4
ENB-162-1
22
ENA-141
ENH-213-1
ENH-213-2
ENB-162-5
ENB-162-10
38
39
40
24
23
25
ENH-213-4
28
27
26
ENB-162-8
29
30
41
42
19
19
19
19
43

※ mark indicates attached part.

■Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-RXMXG7BKA(S	FRONT PANEL ASSY	1		A
		EFP-RXMXG7BKE(S	FRONT PANEL ASSY	1		BS
		EFP-RXMXG7BKE(S	FRONT PANEL ASSY	1		EF
		EFP-RXMXG7BKE(S	FRONT PANEL ASSY	1		EN
		EFP-RXMXG7BKE(S	FRONT PANEL ASSY	1		G
		EFP-RXMXG7BKE(S	FRONT PANEL ASSY	1		GI
		EFP-RXMXG7BKU(S	FRONT PANEL ASSY	1		U
		EFP-RXMXG7BKU(S	FRONT PANEL ASSY	1		UT
	1-1	E102622-007	FRONT PANEL	1		U
		E102622-007	FRONT PANEL	1		UT
		E102622-005	FRONT PANEL	1		BS
		E102622-005	FRONT PANEL	1		EF
		E102622-005	FRONT PANEL	1		EN
		E102622-005	FRONT PANEL	1		G
		E102622-005	FRONT PANEL	1		GI
		E102622-006	FRONT PANEL	1		A
	1-2	E308184-001	WINDOW SCREEN	1		
	1-3	E406971-221	JVC MARK	1		
	2	E308187-002	VOLUME KNOB	1		
	3	EWS142-033	SOCKET WIRE	1	AW990	
	4	SDSF2608Z	SCREW	10		
	5	E407233-001	KNOB	1	MIC	
	6	SDSG3006M	SCREW	3		
	7	E308189-002	KNOB	2	BALANCE	
	8	E406855-008	SPACER	2	FRONT FOOT	
	9	E207579-001	PUSH BUTTON	1	TIMER	
	10	E207583-001	PUSH BUTTON ASSY	1	POWER	
	11	E407098-001	SPECIAL SCREW	1		
	12	E407232-001	REMOCON PLATE	1		
	13	E207580-006	PUSH BUTTON ASSY	1	FUNCTION	
	14	E407228-001	INDICATOR LENS	1		
	15	E207578-001	PUSH BUTTON	1	SLEEP	
	16	E407234-001	MIC BRACKET	1		
	17	E207586-002	PUSH BUTTON ASSY	1	DIRECT	
	18	E207591-001	METAL COVER	1		
	19	E73273-003	SPECIAL SCREW	21		
		E73273-003	SPECIAL SCREW	2		U
		E73273-003	SPECIAL SCREW	2		UT
	20	E308522-028	RATING LABEL	2		UT
	21	EWR127K-14TT	FLAT WIRE	1	FC901	
	22	E102624-001	CHASSIS BASE	1		
	23	E406855-005	SPACER	2	REAR FOOT	
⚠	24	ETP1100-45EA	POWER TRANSFORMER	1		A
⚠		ETP1100-45EABS	POWER TRANSFORMER	1		BS
⚠		ETP1100-45EA	POWER TRANSFORMER	1		EF
⚠		ETP1100-45EA	POWER TRANSFORMER	1		EN
⚠		ETP1100-45EA	POWER TRANSFORMER	1		G
⚠		ETP1100-45EA	POWER TRANSFORMER	1		GI
⚠		ETP1100-45FA	POWER TRANSFORMER	1		U
⚠		ETP1100-45FA	POWER TRANSFORMER	1		UT
	25	E65389-004	SPECIAL SCREW	4		
⚠	26	QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	A
⚠		QMF51E2-1R6SBS	FUSE	2	F101 , F102 (T1.6A/250V)	BS
⚠		QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	EF
⚠		QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	EN

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
⚠		QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	G
⚠		QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	GI
⚠		QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	U
⚠		QMF51A2-1R6S	FUSE	2	F101 , F102 (T1.6A/250V)	UT
⚠	27	QMF51A2-1R25S	FUSE	1	F001 (T1.25A/250V)	A
⚠		QMF51E2-1R25SBS	FUSE	1	F001 (T1.25A/250V)	BS
⚠		QMF51A2-1R25S	FUSE	1	F001 (T1.25A/250V)	EF
⚠		QMF51A2-1R25S	FUSE	1	F001 (T1.25A/250V)	EN
⚠		QMF51A2-1R25S	FUSE	1	F001 (T1.25A/250V)	G
⚠		QMF51A2-1R25S	FUSE	1	F001 (T1.25A/250V)	GI
⚠		QMF51A2-2R5S	FUSE	1	F001 (T2.5A/250V)	U
⚠		QMF51A2-2R5S	FUSE	1	F001 (T2.5A/250V)	UT
⚠	28	QMF51A2-1R25S	FUSE	1	F002 (T1.25A/250V)	U
⚠		QMF51A2-1R25S	FUSE	1	F002 (T1.25A/250V)	UT
	29	E308520-001	PROTECTOR COVER	1		
	30	E48729-008	PLASTIC RIVET	2		
	31	GBSG3008CC	SCREW	7		
	32	EXO090008H05S	SPACER	1		
	33	E308190-002	HEAT SINK	1		
	34	E308191-001	HEAT SINK BRACKET	2		
	35	SBSG3014CC	SCREW	8		
	36	E72018-001	WIRE CLAMP	1		
	37	EWT051-006K	TERMINAL WIRE	1		
	38	E302764-002	PROTECT COVER	1		U
		E302764-002	PROTECT COVER	1		UT
⚠	39	QSR0085-018	VOLTAGE SELECTOR	1		U
⚠		QSR0085-018	VOLTAGE SELECTOR	1		UT
	40	E207674-002	REAR PANEL	1		U
		E207674-002	REAR PANEL	1		UT
		E207674-004	REAR PANEL	1		EF
		E207674-004	REAR PANEL	1		EN
		E207674-004	REAR PANEL	1		G
		E207674-004	REAR PANEL	1		GI
		E207674-005	REAR PANEL	1		A
		E207674-005	REAR PANEL	1		BS
⚠	41	QMP25F0-244	POWER CORD	1		A
⚠		QMP3900-200	POWER CORD	1		EF
⚠		QMP3900-200	POWER CORD	1		EN
⚠		QMP3900-200	POWER CORD	1		G
⚠		QMP3900-200	POWER CORD	1		GI
⚠		QMP7520-200	POWER CORD	1		U
⚠		QMP7520-200	POWER CORD	1		UT
⚠		QMP5530-0085BS	POWER CORD	1		BS
⚠	42	QHS3876-162	CORD STOPPER	1		A
⚠		QHS3876-162	CORD STOPPER	1		EF
⚠		QHS3876-162	CORD STOPPER	1		EN
⚠		QHS3876-162	CORD STOPPER	1		G
⚠		QHS3876-162	CORD STOPPER	1		GI
⚠		QHS3876-162	CORD STOPPER	1		U
⚠		QHS3876-162	CORD STOPPER	1		UT
⚠		QHS3876-162BS	CORD STOPPER	1		BS
	43	E206880-003	FAN ASSY	1		
	44	E3400-431	FELT SPACER	1		
	—	E61029-005	NUMBER LABEL	1		
	—	QZL1031-101	SEV LABEL	1		EF

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	–	E70027-001	APPROVAL LABEL	1		EN

⚠ SAFETY PARTS

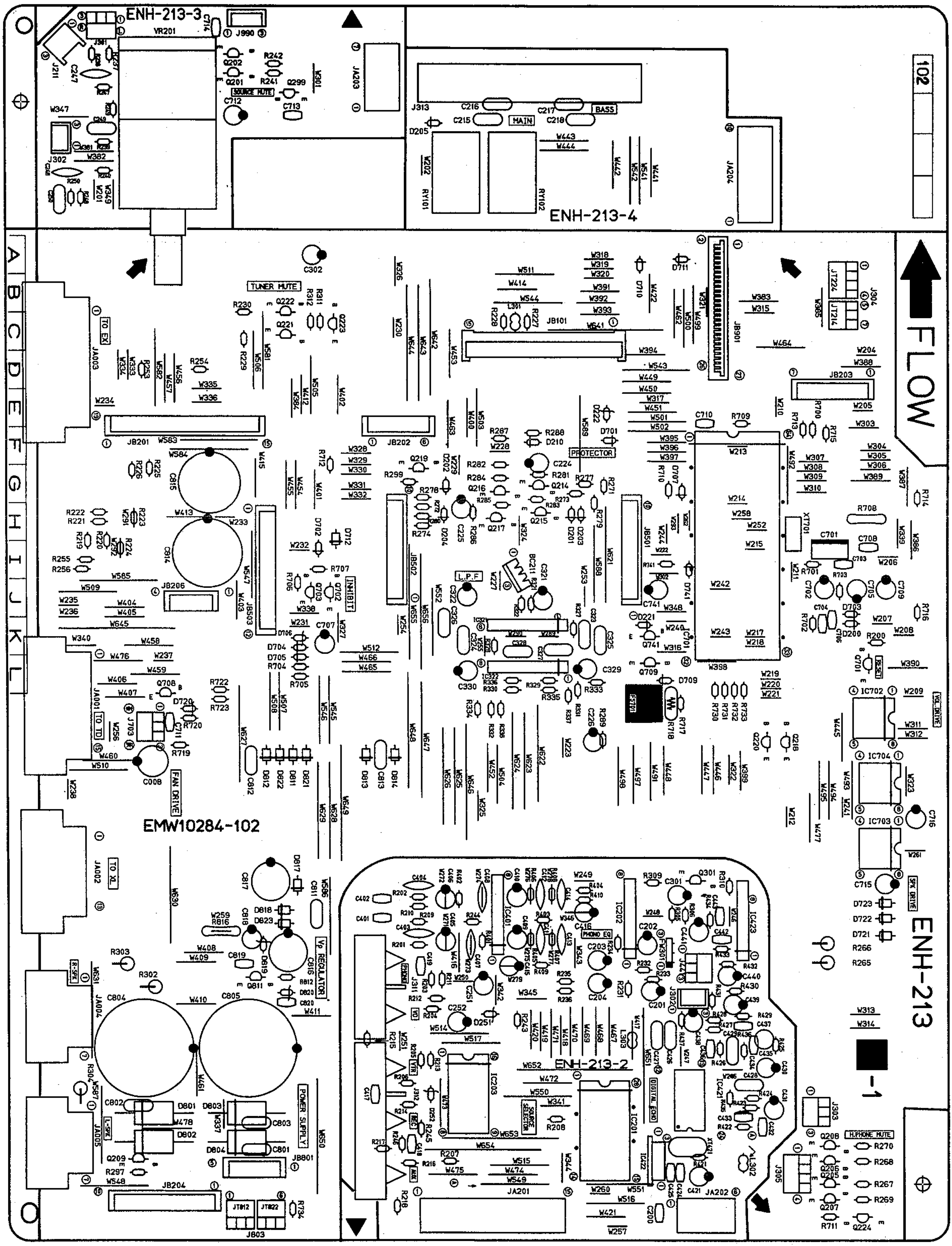
The Marks for Designated Areas

A	Australia	EN	Scandinavia	EF	Continental Europe
BS	the U.K.	G	Germany	GI	Itary
UT	Taiwan	U	Universal Type	No mark indicates all areas.	

Printed Circuit Board Ass'y and Parts List

■ENH-213☐ Main, Source Select & Volume PC Board Ass'y

Note : ENH-213☐ varies according to the areas employed. See note (1) when placing an order.



ENH-213-3
ENH-213-4
ENH-213-2
ENH-213
-1
102
FLOW
EMW10284-102
TUNER MUTE
SOURCE MUTE
MAIN
BASS
PROTECTOR
L.P.F
INHIBIT
FAN DRIVE
TO EX
TO TD
TO XL
Vp REGULATOR
POWER SUPPLY
PHONO EQ
SOURCE SELECTOR
DIGITAL EQ
SPK DRIVE
H.PHONE MUTE
A
B
C
D
E
F
G
H
I
J
K
L

Note (1)

PC Board Ass'y	Designated Areas
ENH-213 C	Taiwan, Universal Type
ENH-213 D	Australia
ENH-213 G	Germany, Italy
ENH-213 H	Scandinavia, the U.K. Continental Europe

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q201	2SD2144S(VW)	SILICON ROHM	
	Q202	2SD2144S(VW)	SILICON ROHM	
	Q205	2SD2144S(VW)	SILICON ROHM	
	Q206	2SD2144S(VW)	SILICON ROHM	
	Q207	2SD2144S(VW)	SILICON ROHM	
	Q208	2SD2144S(VW)	SILICON ROHM	
	Q209	2SC1740S(R,S)	SILICON ROHM	
	Q214	2SC1740S(R,S)	SILICON ROHM	
	Q215	2SC1740S(R,S)	SILICON ROHM	
	Q216	2SC1740S(R,S)	SILICON ROHM	
	Q217	2SA933S(R,S)	SILICON ROHM	
	Q218	DTA114ES	SILICON ROHM	
	Q219	DTA114ES	SILICON ROHM	
	Q220	DTC144ES	SILICON ROHM	
	Q224	DTA114TS	SILICON ROHM	
	Q299	DTA114TS	SILICON ROHM	
	Q301	2SC1740S(R,S)	SILICON ROHM	
	Q701	DTC114YS	SILICON ROHM	
	Q702	DTC114YS	SILICON ROHM	
	Q703	DTC124ES	SILICON	
	Q708	2SD2144S(VW)	SILICON ROHM	
	Q709	DTA123ES	SILICON	
	Q741	DTC144ES	SILICON ROHM	
	Q811	2SA934(Q,R)	SILICON ROHM	

⚠ : SAFETY PARTS

I.C.s

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC201	TC9164N	I.C. TOSHIBA	
	IC202	VC4580L	I.C. DAINICHI	
	IC203	TC4052BP	I.C. TOSHIBA	
	IC321	VC4580L	I.C. DAINICHI	
	IC322	VC4580L	I.C. DAINICHI	
	IC401	VC4580LD	I.C. DAINICHI	
	IC421	M65831FP	I.C. MITSUBISHI	C
	IC422	NJM78M05FD	I.C. DAINICHI	C
	IC423	XRA15218N	I.C. EXAR JAPAN	C
	IC701	UPD78011CW-013	I.C.	
	IC702	LB1639-CV	I.C. SANYO	
	IC703	LB1639-CV	I.C. SANYO	
	IC704	LB1639-CV	I.C. SANYO	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D200	1SS119	SILICON HITACHI	
	D201	1SS119	SILICON HITACHI	
	D202	1SS119	SILICON HITACHI	
	D203	1SS119	SILICON HITACHI	
	D204	1SS119	SILICON HITACHI	
	D205	1SS119	SILICON HITACHI	
	D210	1SS119	SILICON HITACHI	
	D221	1SS119	SILICON HITACHI	
	D222	MTZ2.0JB	ZENER ROHM	
	D251	MTZ5.6JC	ZENER ROHM	
	D252	MTZ5.6JC	ZENER ROHM	
	D701	1SS119	SILICON HITACHI	
	D702	1SS119	SILICON HITACHI	
	D703	1SS119	SILICON HITACHI	
	D704	1SS119	SILICON HITACHI	
	D705	1SS119	SILICON HITACHI	
	D706	MTZ5.1JB	ZENER ROHM	
	D707	1SS119	SILICON HITACHI	
	D709	MA700	ZENER MATSUSHITA	
	D710	1SS119	SILICON HITACHI	
	D711	1SS119	SILICON HITACHI	
	D712	1SR139-200	SILICON ROHM	
	D720	MTZ2.0JB	ZENER ROHM	
	D721	1SR139-200	SILICON ROHM	
	D722	1SR139-200	SILICON ROHM	
	D723	1SR139-200	SILICON ROHM	
	D741	1SS119	SILICON HITACHI	
⚠	D801	30DL2FC	SILICON NIHONINTER	
⚠	D802	30DL2FC	SILICON NIHONINTER	
⚠	D803	30DL2FC	SILICON NIHONINTER	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
⚠	D804	30DL2FC	SILICON NIHONINTER	
	D811	1SR139-200	SILICON ROHM	
	D812	1SR139-200	SILICON ROHM	
	D813	1SR139-200	SILICON ROHM	
	D814	1SR139-200	SILICON ROHM	
	D817	1SR139-200	SILICON ROHM	
	D818	1SR139-200	SILICON ROHM	
	D819	MTZ33JC	ZENER ROHM	
	D820	MTZ8.2JC	ZENER ROHM	
	D821	1SR139-200	SILICON ROHM	
	D822	1SR139-200	SILICON ROHM	
	D823	1SR139-200	SILICON ROHM	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C008	QETB0JM-477	470MF 6.3V ELECTRO	
	C200	QCBB1HK-561	560PF 50V CERAMIC	
	C201	EEZ5009-106	10MF ELECTRO	
	C202	EEZ5009-106	10MF ELECTRO	
	C203	EEZ5009-106	10MF ELECTRO	
	C204	EEZ5009-106	10MF ELECTRO	
	C215	QFLB1HJ-102	1000PF 50V MYLAR	G
	C216	QFLB1HJ-102	1000PF 50V MYLAR	G
	C217	QFLB1HJ-102	1000PF 50V MYLAR	G
	C218	QFLB1HJ-102	1000PF 50V MYLAR	G
	C224	QETB1EM-106	10MF 25V ELECTRO	
	C225	QETB1AM-476	47MF 10V ELECTRO	
	C226	QEK51HM-474G	0.47MF 50V ELECTRO	
	C247	QCS21HJ-820	82PF 50V CERAMIC	
	C248	QCS21HJ-820	82PF 50V CERAMIC	
	C249	QFN81HJ-103	0.01MF 50V MYLAR	
	C250	QFN81HJ-103	0.01MF 50V MYLAR	
	C251	QETB1AM-476	47MF 10V ELECTRO	
	C252	QETB1AM-476	47MF 10V ELECTRO	
	C299	QETB1HM-106	10MF 50V ELECTRO	
	C301	QEK51HM-105G	1MF 50V ELECTRO	
	C302	QETB1CM-226	22MF 16V ELECTRO	
	C321	EEZ5009-106	10MF ELECTRO	
	C322	EEZ5009-106	10MF ELECTRO	
	C323	QFVB1HJ-184N	0.18MF 50V T.FILM	
	C324	QFVB1HJ-184N	0.18MF 50V T.FILM	
	C325	QFVB1HJ-184N	0.18MF 50V T.FILM	
	C326	QFVB1HJ-184N	0.18MF 50V T.FILM	
	C327	QFVB1HJ-564N	0.56MF 50V T.FILM	
	C328	QFVB1HJ-564N	0.56MF 50V T.FILM	
	C329	EEZ5009-106	10MF ELECTRO	
	C330	EEZ5009-106	10MF ELECTRO	
	C401	QCBB1HK-331	330PF 50V CERAMIC	G
	C402	QCBB1HK-331	330PF 50V CERAMIC	G
	C403	QCS21HJ-101	100PF 50V CERAMIC	C
	C403	QCS21HJ-101	100PF 50V CERAMIC	D
	C403	QCS21HJ-221	220PF 50V CERAMIC	G
	C403	QCS21HJ-101	100PF 50V CERAMIC	H
	C404	QCS21HJ-101	100PF 50V CERAMIC	C
	C404	QCS21HJ-101	100PF 50V CERAMIC	D
	C404	QCS21HJ-221	220PF 50V CERAMIC	G
	C404	QCS21HJ-101	100PF 50V CERAMIC	H
	C405	QETB1HM-225	2.2MF 50V ELECTRO	
	C406	QETB1HM-225	2.2MF 50V ELECTRO	
	C407	QCS21HJ-101	100PF 50V CERAMIC	
	C408	QCS21HJ-101	100PF 50V CERAMIC	
	C409	QETB1EM-106	10MF 25V ELECTRO	
	C410	QETB1EM-106	10MF 25V ELECTRO	
	C411	QCY21HK-682	6800PF 50V CERAMIC	
	C412	QCY21HK-682	6800PF 50V CERAMIC	
	C413	QCY21HK-182	1800PF 50V CERAMIC	
	C414	QCY21HK-182	1800PF 50V CERAMIC	
	C415	QETB1HM-225	2.2MF 50V ELECTRO	
	C416	QETB1HM-225	2.2MF 50V ELECTRO	
	C417	QCBB1HK-221	220PF 50V CERAMIC	G
	C418	QCBB1HK-221	220PF 50V CERAMIC	G
	C419	QCHB1EZ-223	0.022MF 25V CERAMIC	G
	C421	QETB1AM-107	100MF 10V ELECTRO	C
	C423	QCZ0205-155	1.5MF 25V CERAMIC	C
	C424	QCZ0202-155	1.5MF 25V CERAMIC	C
	C426	QFVB1HJ-104N	0.1MF 50V T.FILM	C
	C427	QFVB1HJ-104N	0.1MF 50V T.FILM	C
	C428	QFVB1HJ-104N	0.1MF 50V T.FILM	C
	C429	QFVB1HJ-104N	0.1MF 50V T.FILM	C
	C430	QETB1AM-476	47MF 10V ELECTRO	C
	C431	QETB1HM-105	1MF 50V ELECTRO	C
	C432	QCXB1CM-562	5600PF 16V CERAMIC	C
	C433	QCBB1HK-561	560PF 50V CERAMIC	C
	C434	QCHB1EZ-223	0.022MF 25V CERAMIC	C
	C435	QEN51HM-105	1MF 50V NON POLE	C
	C436	QCBB1HK-561	560PF 50V CERAMIC	C
	C437	QCXB1CM-562	5600PF 16V CERAMIC	C
	C438	QEK51HM-105G	1MF 50V ELECTRO	C
	C439	QEK51EM-106	10MF 25V ELECTRO	C
	C440	QEK51HM-105G	1MF 50V ELECTRO	C
	C441	QEK51EM-106	10MF 25V ELECTRO	C
	C442	QCBB1HK-101	100PF 50V CERAMIC	C
	C443	QCGB1HK-102	1000PF 50V CERAMIC	C

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C701	QEAD0HZ-10AA	ELECTRO	
	C702	QCZ0205-155	1.5MF 25V CERAMIC	
	C703	QCVB1CM-103	0.01MF 16V CERAMIC	
	C704	QCVB1CM-103	0.01MF 16V CERAMIC	
	C705	QETB1HM-474	0.47MF 50V ELECTRO	
	C706	QCVB1CM-103	0.01MF 16V CERAMIC	
	C707	QETB1HM-105	1MF 50V ELECTRO	
	C708	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C709	QETB1EM-106	10MF 25V ELECTRO	
	C710	QCBB1HK-471	470PF 50V CERAMIC	
	C711	QCVB1CM-103	0.01MF 16V CERAMIC	
	C712	QETB1CM-226	22MF 16V ELECTRO	
	C713	QCVB1CM-103	0.01MF 16V CERAMIC	
	C714	QCVB1CM-103	0.01MF 16V CERAMIC	
	C715	QETB1AM-476	47MF 10V ELECTRO	
	C716	QETB1AM-476	47MF 10V ELECTRO	
	C717	QCS21HJ-471	470PF 50V CERAMIC	C
	C717	QCS21HJ-471	470PF 50V CERAMIC	D
	C717	QCS21HJ-471	470PF 50V CERAMIC	H
	C741	QETB1AM-107	100MF 10V ELECTRO	
	C801	QFV82AJ-104	0.1MF 100V T.FILM	
	C802	QFV82AJ-104	0.1MF 100V T.FILM	
	C803	QFV82AJ-104	0.1MF 100V T.FILM	
	C804	EEW4209-568E	5600MF ELECTRO	
	C805	EEW4209-568E	5600MF ELECTRO	
	C811	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C812	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C813	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C814	QETB1EM-338	3300MF 25V ELECTRO	
	C815	QETB1VM-228N	2200MF 35V ELECTRO	
	C816	QETB1HM-227	220MF 50V ELECTRO	
	C817	QETB1HM-227	220MF 50V ELECTRO	
	C818	QETB1HM-226	22MF 50V ELECTRO	
	C819	QCVB1CM-103	0.01MF 16V CERAMIC	
	C820	QCVB1CM-103	0.01MF 16V CERAMIC	
	C825	QCF21HP-223	0.022MF 50V CERAMIC	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R200	QRD167J-103	10K 1/6W CARBON	
	R201	QRD167J-272	2.7K 1/6W CARBON	
	R202	QRD167J-272	2.7K 1/6W CARBON	
	R203	QRD167J-153	15K 1/6W CARBON	
	R204	QRD167J-153	15K 1/6W CARBON	
	R205	QRD167J-153	15K 1/6W CARBON	
	R206	QRD167J-153	15K 1/6W CARBON	
	R207	QRD167J-472	4.7K 1/6W CARBON	
	R208	QRD167J-472	4.7K 1/6W CARBON	
	R209	QRD167J-104	100K 1/6W CARBON	
	R210	QRD167J-104	100K 1/6W CARBON	
	R211	QRD167J-104	100K 1/6W CARBON	
	R212	QRD167J-104	100K 1/6W CARBON	
	R213	QRD167J-104	100K 1/6W CARBON	
	R214	QRD167J-104	100K 1/6W CARBON	
	R215	QRD167J-104	100K 1/6W CARBON	
	R216	QRD167J-104	100K 1/6W CARBON	
	R217	QRD167J-153	15K 1/6W CARBON	
	R218	QRD167J-153	15K 1/6W CARBON	
	R219	QRD167J-242	2.4K 1/6W CARBON	
	R220	QRD167J-242	2.4K 1/6W CARBON	
	R221	QRD167J-822	8.2K 1/6W CARBON	
	R222	QRD167J-822	8.2K 1/6W CARBON	
	R227	QRD167J-152	1.5K 1/6W CARBON	
	R228	QRD167J-152	1.5K 1/6W CARBON	
	R229	QRD167J-103	10K 1/6W CARBON	
	R230	QRD167J-103	10K 1/6W CARBON	
	R231	QRD167J-104	100K 1/6W CARBON	
	R232	QRD167J-104	100K 1/6W CARBON	
	R233	QRD167J-104	100K 1/6W CARBON	
	R234	QRD167J-104	100K 1/6W CARBON	
	R235	QRD167J-104	100K 1/6W CARBON	
	R236	QRD167J-104	100K 1/6W CARBON	
⚠	R237	QRV144F-3901	3.9K 1/4W M.FILM	
⚠	R238	QRV144F-3901	3.9K 1/4W M.FILM	
	R239	QRD167J-104	100K 1/6W CARBON	
	R240	QRD167J-104	100K 1/6W CARBON	
	R241	QRD167J-103	10K 1/6W CARBON	
	R242	QRD167J-103	10K 1/6W CARBON	
	R243	QRD167J-471	470 1/6W CARBON	
	R244	QRD167J-471	470 1/6W CARBON	
	R245	QRD167J-513	51K 1/6W CARBON	
	R246	QRD167J-513	51K 1/6W CARBON	
	R247	QRD167J-184	180K 1/6W CARBON	
	R248	QRD167J-184	180K 1/6W CARBON	
	R249	QRD167J-123	12K 1/6W CARBON	
	R250	QRD167J-123	12K 1/6W CARBON	
	R253	QRD167J-471	470 1/6W CARBON	
	R254	QRD167J-471	470 1/6W CARBON	
	R255	QRD167J-681	680 1/6W CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R256	QRD167J-681	680 1/6W CARBON	
⚠	R265	QRG01DJ-331	330 1W O.M.FILM	
⚠	R266	QRG01DJ-331	330 1W O.M.FILM	
	R267	QRD167J-473	47K 1/6W CARBON	
	R268	QRD167J-473	47K 1/6W CARBON	
	R269	QRD167J-473	47K 1/6W CARBON	
	R270	QRD167J-473	47K 1/6W CARBON	
	R271	QRD167J-104	100K 1/6W CARBON	
	R272	QRD167J-104	100K 1/6W CARBON	
	R273	QRD167J-104	100K 1/6W CARBON	
	R274	QRD167J-104	100K 1/6W CARBON	
	R277	QRD167J-393	39K 1/6W CARBON	
	R278	QRD167J-393	39K 1/6W CARBON	
	R279	QRD167J-393	39K 1/6W CARBON	
	R280	QRD167J-393	39K 1/6W CARBON	
	R281	QRD167J-103	10K 1/6W CARBON	
	R282	QRD167J-103	10K 1/6W CARBON	
	R283	QRD167J-103	10K 1/6W CARBON	
	R284	QRD167J-103	10K 1/6W CARBON	
	R285	QRD167J-104	100K 1/6W CARBON	
	R286	QRD167J-104	100K 1/6W CARBON	
	R287	QRD167J-103	10K 1/6W CARBON	
	R288	QRD167J-222	2.2K 1/6W CARBON	
	R289	QRD167J-682	6.8K 1/6W CARBON	
	R297	QRD167J-152	1.5K 1/6W CARBON	
	R299	QRD167J-333	33K 1/6W CARBON	
⚠	R302	QRG01DJ-680	68 1W O.M.FILM	
⚠	R303	QRG01DJ-680	68 1W O.M.FILM	
⚠	R304	QRG01DJ-680	68 1W O.M.FILM	
	R305	QRD167J-104	100K 1/6W CARBON	
	R306	QRD167J-104	100K 1/6W CARBON	
	R309	QRD167J-105	1M 1/6W CARBON	
	R310	QRD167J-102	1K 1/6W CARBON	
	R321	QRD167J-104	100K 1/6W CARBON	
	R322	QRD167J-104	100K 1/6W CARBON	
	R327	QRD167J-222	2.2K 1/6W CARBON	
	R328	QRD167J-222	2.2K 1/6W CARBON	
⚠	R329	QRV144F-2202	22K 1/4W M.FILM	
⚠	R330	QRV144F-2202	22K 1/4W M.FILM	
⚠	R331	QRV144F-3302	33K 1/4W M.FILM	
⚠	R332	QRV144F-3302	33K 1/4W M.FILM	
	R333	QRD167J-562	5.6K 1/6W CARBON	
	R334	QRD167J-562	5.6K 1/6W CARBON	
⚠	R335	QRV144F-3302	33K 1/4W M.FILM	
⚠	R336	QRV144F-3302	33K 1/4W M.FILM	
⚠	R337	QRV144F-3302	33K 1/4W M.FILM	
⚠	R338	QRV144F-3302	33K 1/4W M.FILM	
	R401	QRD167J-104	100K 1/6W CARBON	
	R402	QRD167J-104	100K 1/6W CARBON	
	R403	QRD167J-751	750 1/6W CARBON	
	R404	QRD167J-751	750 1/6W CARBON	
	R405	QRD167J-474	470K 1/6W CARBON	
	R406	QRD167J-474	470K 1/6W CARBON	
	R407	QRD167J-393	39K 1/6W CARBON	
	R408	QRD167J-393	39K 1/6W CARBON	
	R409	QRD167J-104	100K 1/6W CARBON	
	R410	QRD167J-104	100K 1/6W CARBON	
	R421	QRD167J-105	1M 1/6W CARBON	C
	R422	QRD167J-103	10K 1/6W CARBON	C
	R423	QRD167J-153	15K 1/6W CARBON	C
	R424	QRD167J-153	15K 1/6W CARBON	C
	R425	QRD167J-183	18K 1/6W CARBON	C
	R426	QRD167J-302	3K 1/6W CARBON	C
	R427	QRD167J-103	10K 1/6W CARBON	C
	R428	QRD167J-153	15K 1/6W CARBON	C
	R429	QRD167J-153	15K 1/6W CARBON	C
	R430	QRD167J-822	8.2K 1/6W CARBON	C
	R431	QRD167J-103	10K 1/6W CARBON	C
	R432	QRD167J-104	100K 1/6W CARBON	C
	R433	QRD167J-104	100K 1/6W CARBON	C
	R434	QRD167J-302	3K 1/6W CARBON	C
	R435	QRD167J-330	33 1/6W CARBON	C
	R436	QRD167J-330	33 1/6W CARBON	C
	R437	QRD167J-272	2.7K 1/6W CARBON	C
	R700	QRD167J-103	10K 1/6W CARBON	
	R701	QRD167J-470	47 1/6W CARBON	
	R702	QRD167J-223	22K 1/6W CARBON	
	R703	QRD167J-103	10K 1/6W CARBON	
	R704	QRD167J-103	10K 1/6W CARBON	
	R705	QRD167J-103	10K 1/6W CARBON	
	R706	QRD167J-103	10K 1/6W CARBON	
	R707	QRD167J-102	1K 1/6W CARBON	
⚠	R708	QRZ0077-100	10 1/4W FUSIBLE	
	R709	QRD167J-473	47K 1/6W CARBON	
	R710	QRD161J-221	220 1/6W CARBON	
	R711	QRD167J-102	1K 1/6W CARBON	
	R712	QRD167J-103	10K 1/6W CARBON	
	R713	QRD167J-103	10K 1/6W CARBON	
	R714	QRD167J-223	22K 1/6W CARBON	
	R715	QRD167J-103	10K 1/6W CARBON	
	R716	QRD167J-471	470 1/6W CARBON	
	R717	QRD167J-391	390 1/6W CARBON	
	R718	PTH9M04BE471TS	POSITIVE T	HE
	R719	QRD167J-152	1.5K 1/6W CARBON	
	R720	QRD167J-200	20 1/6W CARBON	C

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R720	QRD167J-470	47 1/6W CARBON	D
	R720	QRD167J-470	47 1/6W CARBON	G
	R720	QRD167J-470	47 1/6W CARBON	H
	R722	QRD167J-512	5.1K 1/6W CARBON	
	R723	QRD167J-512	5.1K 1/6W CARBON	
	R730	QRD167J-331	330 1/6W CARBON	
	R731	QRD167J-331	330 1/6W CARBON	
	R732	QRD167J-331	330 1/6W CARBON	
	R733	QRD167J-331	330 1/6W CARBON	
	R734	QRD167J-223	22K 1/6W CARBON	
	R741	QRD167J-223	22K 1/6W CARBON	
	R812	QRD167J-332	3.3K 1/6W CARBON	
⚠	R816	QRZ0077-4R7	4.7 1/4W FUSIBLE	
	VR201	QVDC94A-E15E	100K VARIABLE	

⚠ : SAFETY PARTS

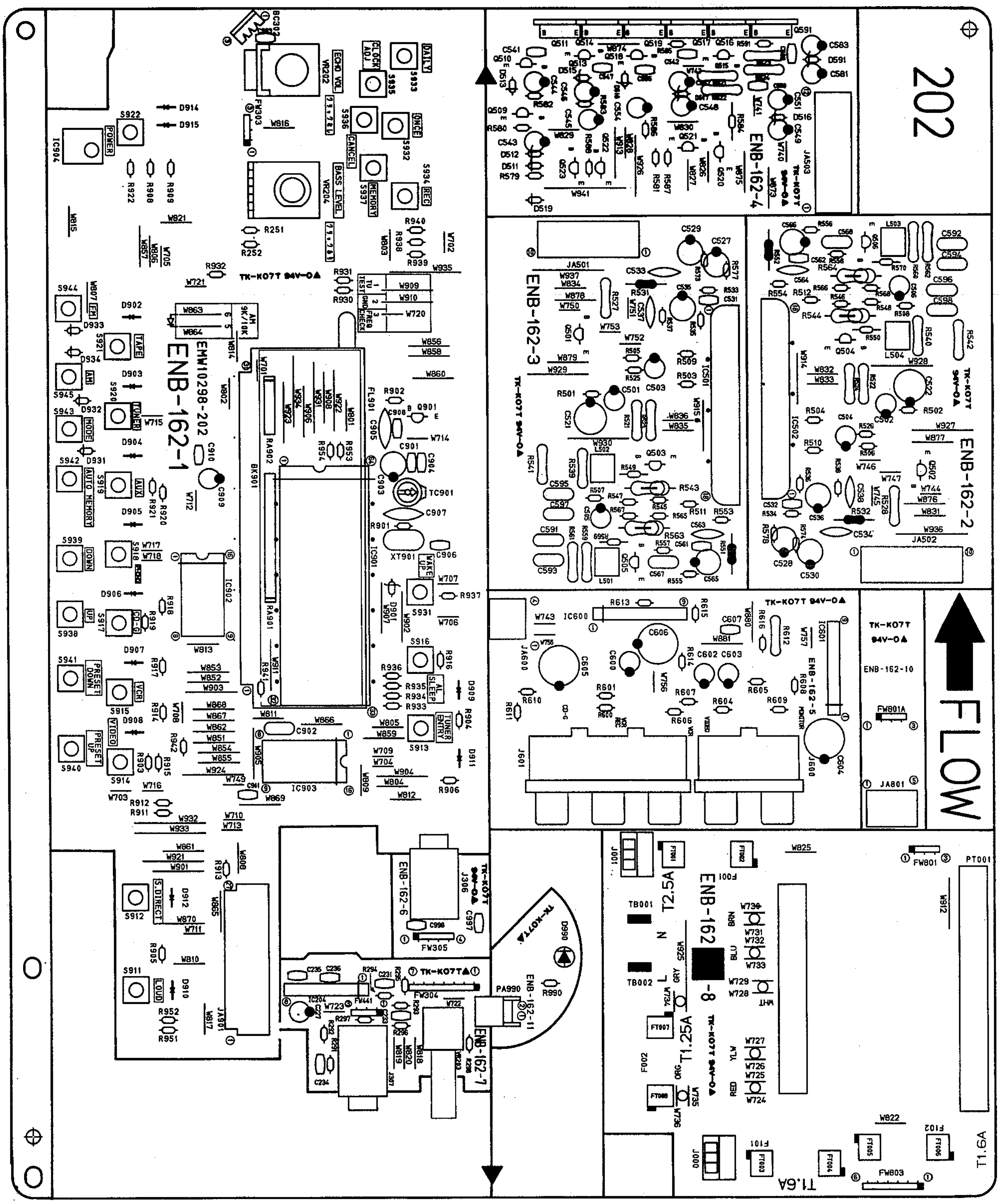
Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E3400-431	FELT SPACER	
	J211	EMV5109-003B	PLUG ASSY(3PIN) FROM MASTER VOLUME	
	J301	EMV7122-103	CONNECTOR(3PIN) TO MASTER VOLUME	
	J302	EMV5109-003A	PLUG ASSY(3PIN) TO BALANCE CB	
	J303	EMV7122-103	CONNECTOR(3PIN) TO TWIN BASS CB	
	J305	EMV7122-004	CONNECTOR(4PIN) TO HEADPHONE CB	
	J311	EMN00TV-405A	4P PIN JACK(PHONO,VD)	
	J312	EMN00TV-602A	6P PIN JACK(VTR,AUX)	
	J313	EMB90TV-803A	SPEAKER TERMINAL	
	J441	EMV7122-103	CONNECTOR(4PIN) SOURCE SELECTOR CB	C
	J703	EMV7122-103	CONNECTOR(3PIN) FAN	
	J990	EMV5133-003	PLUG ASSY(3PIN) TO VOLUME INDICATOR	
	L302	EQL4004-4R7	INDUCTOR	C
	L303	EQL4004-4R7	INDUCTOR	C
	BC211	EWS293-0116	SOCKET WIRE(3PIN) TO MASTER VOLUME CB	
	EP101	EMZ4002-001	EARTH PLATE	
	EP102	EMZ4002-001	EARTH PLATE	
	EP103	EMZ4002-001	EARTH PLATE	
	FS701	E306805-040	SPACER	
	FS717	E3400-431	FELT SPACER	C
	FW301	EWR33B-16LST	FLAT WIRE(3PIN) SIGNAL LINE	
	JA001	EMV7127-015	CONNECTOR(15PIN) TO DECK	
	JA002	EMV7127-013	CONNECTOR(13PIN) TO CD	
	JA003	EMV7127-019	CONNECTOR(19PIN) TO SEA	
	JA004	EMV7127-007	CONNECTOR(7PIN) TO Rch SPEAKER	
	JA005	EMV7127-007	CONNECTOR(7PIN) TO Lch SPEAKER	
	JA201	EMV7125-015R	CONNECTOR(15PIN) SOURCE INPUT	
	JA202	EMV7125-006R	CONNECTOR(6PIN) SELECTOR CONTROL	
	JA203	EMV7125-007R	CONNECTOR(7PIN) TO MASTER VOLUME CB	
	JA204	EMV7125-010R	CONNECTOR(10PIN) TO SPEAKER CB	
	JB101	EMV5140-015	PLUG ASSY(4PIN) TO VIDEO SELECTOR CB	
	JB201	EMV5125-015	PLUG ASSY(10PIN) TO Lch AMPLIFIER	
	JB202	EMV5125-006	PLUG ASSY(10PIN) TO Rch AMPLIFIER	
	JB203	EMV5125-007	PLUG ASSY(7PIN) TO MASTER VOLUME CB	
	JB204	EMV5125-010	PLUG ASSY(10PIN) SPEAKER CB	
	JB206	EMV5125-004	PLUG ASSY(15PIN) TO TUNER CB	
	JB501	EMV5125-010	PLUG ASSY(15PIN) SOURCE SIGNAL	
	JB502	EMV5125-010	PLUG ASSY(6PIN) TO SELECTOR	
	JB503	EMV5125-012	PLUG ASSY(12PIN) TO REGULATOR	
	JB801	EMV5125-005	PLUG ASSY(5PIN) TO POWER SECONDARY	
	JB901	EMV7123-027	CONNECTOR(27PIN) TO FRONT CB	
	JT214	EMV7122-103	CONNECTOR(3PIN) PART OF J304	
	JT224	EMV7122-004	CONNECTOR(4PIN) PART OF J304	
	JT812	EMV7122-103	CONNECTOR(3PIN) PART OF J803	
	JT822	EMV7122-103	CONNECTOR(3PIN) PART OF J803	
	LT101	52868-4		
	RY101	ESK8D24-212	RELAY	
	RY102	ESK8D24-212	RELAY	
	WT101	EWT011-138	TERMINAL WIRE	C
	WT717	EWT011-138	TERMINAL WIRE	C
	WT717	EWT011-138	TERMINAL WIRE	D
	WT717	EWT011-138	TERMINAL WIRE	H
	XT421	ECX0020-000EUZ	RESONATOR	C
	XT701	ECX0008-380KN	RESONATOR	

⚠ : SAFETY PARTS

■ENB-162☐ Front, Power Supply & Amplifier PC Board Ass'y

Note : ENB-162☐ varies according to the areas employed. See note (1) when placing an order.


202
ENB-162-1
ENB-162-2
ENB-162-3
ENB-162-4
ENB-162-5
ENB-162-6
ENB-162-7
ENB-162-8
ENB-162-10
ENB-162-11
EMW10298-202
TK-KO7T 94V-0▲
FLOW
POWER
TAPE
AM
FM
TUNER
MODE
AUX
AUTO MEMORY
DOWN
UP
CD-G
PRESET DOWN
VCR
VIDEO
PRESET UP
S.DIRECT
LOUD
ECHO VOL
CLOCK ADJ
DAILY
ONCE
CANCEL
BASS LEVEL
MEMORY
REC
WAKE UP
AL SLEEP
TUNER ENTRY
FREQ CHECK
AM 9K/10K
FL901
IC901
IC902
IC903
IC501
IC502
IC600
IC601
J601
J600
J306
J307
JA501
JA502
JA503
JA600
JA801
JA901
J000
J001
TB001
TB002
T2.5A
T1.25A
T1.6A
T1.6A
F001
F002
F101
F102
PT001
FW801
FW803
PA990
D990
XT901
TC901

Note (1)

PC Board Ass'y	Designated Areas
ENB-162 B	Taiwan, Universal Type
ENB-162 D	Australia
ENB-162 E	Scandinavia Continental Europe
ENB-162 F BS	Germany
ENB-162 G	the U.K.
ENB-162 H	Italy

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q501	DTC144ES	SILICON ROHM	
	Q502	DTC144ES	SILICON ROHM	
	Q503	2SA933S(R,S)	SILICON ROHM	
	Q504	2SA933S(R,S)	SILICON ROHM	
	Q505	2SA933S(R,S)	SILICON ROHM	
	Q506	2SA933S(R,S)	SILICON ROHM	
	Q509	2SC1740S(R,S)	SILICON ROHM	
	Q510	2SA733A(P,Q)	SILICON	
	Q511	2SB1187(F,G)	SILICON ROHM	
	Q513	2SA733A(P,Q)	SILICON	
	Q514	2SB1187(F,G)	SILICON ROHM	
	Q515	2SC945A(P,Q)	SILICON NEC	
	Q516	2SD2061(F,G)	SILICON ROHM	
	Q517	2SD1944(J,K)	SILICON ROHM	
	Q518	2SA733A(P,Q)	SILICON	
	Q519	2SB1187(F,G)	SILICON ROHM	
	Q520	DTA144ES	SILICON ROHM	
	Q521	DTC144ES	SILICON ROHM	
	Q522	DTA144ES	SILICON ROHM	
	Q523	DTC144ES	SILICON ROHM	
	Q591	2SD2061(F,G)	SILICON ROHM	
	Q901	DTA114YS	SILICON ROHM	

⚠ : SAFETY PARTS

I.C.s

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC204	XRA15218N	I.C. EXAR JAPAN	
	IC501	STK4141MK5	I.C. SANYO	
	IC502	STK4141MK5	I.C. SANYO	
	IC600	LA7952	I.C. SANYO	
	IC601	LA7952	I.C. SANYO	
	IC901	HD614089SD57	I.C. HITACHI	
	IC902	TC74HC595AP	I.C. TOSHIBA	
	IC903	TC74HC595AP	I.C. TOSHIBA	
	IC904	GP1U901X	I.C. SHARP	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D511	1SS119	SILICON HITACHI	
	D512	RD12JSB3	ZENER NEC	
	D513	1SS119	SILICON HITACHI	
	D515	RD12JSB3	ZENER NEC	
	D516	MTZ11JC	ZENER ROHM	
	D517	MTZ6.2JC	ZENER ROHM	
	D518	MTZ11JC	ZENER ROHM	
	D519	1SS119	SILICON HITACHI	
	D591	MTZ5.6JC	ZENER ROHM	
	D901	MTZ5.6JC	ZENER ROHM	
	D902	SLR-342VC3F	L.E.D. ROHM	
	D903	SLR-342VC3F	L.E.D. ROHM	
	D904	SLR-342VC3F	L.E.D. ROHM	
	D905	SLR-342VC3F	L.E.D. ROHM	
	D906	SLR-342VC3F	L.E.D. ROHM	
	D907	SLR-342VC3F	L.E.D. ROHM	
	D908	SLR-342VC3F	L.E.D. ROHM	
	D909	SLR-342VC3F	L.E.D. ROHM	
	D910	SLR-342VC3F	L.E.D. ROHM	
	D911	SLR-342MCA47	L.E.D. ROHM	
	D912	SLR-342VC3F	L.E.D. ROHM	
	D914	SLR-342VC3F	L.E.D. ROHM	
	D915	SLR-342VC3F	L.E.D. ROHM	
	D931	1SS119	SILICON HITACHI	B
	D933	1SS119	SILICON HITACHI	B
	D933	1SS119	SILICON HITACHI	D
	D934	1SS119	SILICON HITACHI	H
	D990	LN282RPX	L.E.D.	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C227	QER51CM-106G	10MF 16V ELECTRO	
	C230	QER51CM-106G	10MF 16V ELECTRO	D
	C230	QER51CM-106G	10MF 16V ELECTRO	E
	C230	QER51CM-106G	10MF 16V ELECTRO	FBS
	C230	QER51CM-106G	10MF 16V ELECTRO	G
	C230	QER51CM-106G	10MF 16V ELECTRO	H
	C231	QCBB1HK-101	100PF 50V CERAMIC	
	C233	QCBB1HK-101	100PF 50V CERAMIC	
	C234	QCGB1HK-102	1000PF 50V CERAMIC	
	C235	QCVB1CM-103	0.01MF 16V CERAMIC	
	C236	QCVB1CM-103	0.01MF 16V CERAMIC	
	C501	QETB1HM-106	10MF 50V ELECTRO	
	C502	QETB1HM-106	10MF 50V ELECTRO	
	C503	QETB1HM-226	22MF 50V ELECTRO	
	C504	QETB1HM-226	22MF 50V ELECTRO	
	C505	QETB1HM-226	22MF 50V ELECTRO	
	C506	QETB1HM-226	22MF 50V ELECTRO	
	C521	EEZ5009-476	47MF ELECTRO	
	C522	EEZ5009-476	47MF ELECTRO	
	C527	EEZ5009-106	10MF ELECTRO	
	C528	EEZ5009-106	10MF ELECTRO	
	C529	EEZ5009-106	10MF ELECTRO	
	C530	EEZ5009-106	10MF ELECTRO	
	C531	QCBB1HK-561	560PF 50V CERAMIC	
	C532	QCBB1HK-561	560PF 50V CERAMIC	
	C535	EEZ5009-225	2.2MF ELECTRO	
	C536	EEZ5009-225	2.2MF ELECTRO	
	C537	QCS21HJ-5R0	5PF 50V CERAMIC	
	C538	QCS21HJ-5R0	5PF 50V CERAMIC	
	C541	QCVB1CM-103	0.01MF 16V CERAMIC	
	C542	QCVB1CM-103	0.01MF 16V CERAMIC	
	C543	QETB1EM-106	10MF 25V ELECTRO	
	C544	QETB1EM-106	10MF 25V ELECTRO	
	C545	QETB1CM-226	22MF 16V ELECTRO	
	C546	QETB1CM-226	22MF 16V ELECTRO	
	C547	QCVB1CM-103	0.01MF 16V CERAMIC	
	C548	QETB1CM-226	22MF 16V ELECTRO	
	C549	QETB1CM-226	22MF 16V ELECTRO	
	C550	QCVB1CM-103	0.01MF 16V CERAMIC	
	C551	QETB1CM-476	47MF 16V ELECTRO	
	C552	QETB1AM-476	47MF 10V ELECTRO	
	C554	QETB1CM-226	22MF 16V ELECTRO	
	C555	QCVB1CM-103	0.01MF 16V CERAMIC	
	C561	QCBB1HK-101	100PF 50V CERAMIC	
	C562	QCBB1HK-101	100PF 50V CERAMIC	
	C563	QFVB1HJ-394N	0.39MF 50V T.FILM	
	C564	QFVB1HJ-394N	0.39MF 50V T.FILM	
	C565	EET2501-107E	100MF ELECTRO	
	C566	EET2501-107E	100MF ELECTRO	
	C567	QFN81HJ-123	0.012MF 50V MYLAR	
	C568	QFN81HJ-123	0.012MF 50V MYLAR	
	C581	QETB1AM-476	47MF 10V ELECTRO	
	C582	QCVB1CM-103	0.01MF 16V CERAMIC	
	C583	QETB1AM-476	47MF 10V ELECTRO	
	C591	QFLB1HJ-104	0.1MF 50V MYLAR	
	C592	QFLB1HJ-104	0.1MF 50V MYLAR	
	C593	QFLB1HJ-104	0.1MF 50V MYLAR	
	C594	QFLB1HJ-104	0.1MF 50V MYLAR	
	C595	QFLB1HJ-104	0.1MF 50V MYLAR	
	C596	QFLB1HJ-104	0.1MF 50V MYLAR	
	C597	QFLB1HJ-104	0.1MF 50V MYLAR	
	C598	QFLB1HJ-104	0.1MF 50V MYLAR	
	C600	QETB1AM-476	47MF 10V ELECTRO	B
	C602	QETB1AM-476	47MF 10V ELECTRO	
	C603	QETB1AM-476	47MF 10V ELECTRO	
	C604	QETB0JM-108	1000MF 6.3V ELECTRO	
	C605	QETB0JM-108	1000MF 6.3V ELECTRO	
	C606	QETB1CM-108	1000MF 16V ELECTRO	
	C607	QCVB1CM-103	0.01MF 16V CERAMIC	
	C901	QCVB1CM-103	0.01MF 16V CERAMIC	
	C902	QCZ0202-155	1.5MF 25V CERAMIC	
	C903	QETB0JM-227	220MF 6.3V ELECTRO	
	C904	QCGB1HK-102	1000PF 50V CERAMIC	
	C905	QCF21HP-103	0.01MF 50V CERAMIC	
	C906	QCVB1CM-103	0.01MF 16V CERAMIC	
	C907	QCT26CH-120	12PF 50V CERAMIC	
	C909	QEK51HM-105G	1MF 50V ELECTRO	
	C910	QCVB1CM-103	0.01MF 16V CERAMIC	
	C911	QCBB1HK-561	560PF 50V CERAMIC	
	C993	QCVB1CM-103	0.01MF 16V CERAMIC	B
	C997	QCBB1HK-471	470PF 50V CERAMIC	G
	C997	QCBB1HK-471	470PF 50V CERAMIC	H
	C998	QCBB1HK-471	470PF 50V CERAMIC	G
	C998	QCBB1HK-471	470PF 50V CERAMIC	H

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R251	QRD167J-102	1K 1/6W CARBON	
	R252	QRD167J-102	1K 1/6W CARBON	
	R291	QRD167J-102	1K 1/6W CARBON	
	R292	QRD167J-912	9.1K 1/6W CARBON	
	R293	QRD167J-823	82K 1/6W CARBON	B

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R293	QRD167J-104	100K 1/6W CARBON	D
	R293	QRD167J-104	100K 1/6W CARBON	E
	R293	QRD167J-104	100K 1/6W CARBON	FBS
	R293	QRD167J-104	100K 1/6W CARBON	G
	R293	QRD167J-104	100K 1/6W CARBON	H
	R294	QRD167J-153	15K 1/6W CARBON	B
	R294	QRD167J-331	330 1/6W CARBON	D
	R294	QRD167J-331	330 1/6W CARBON	E
	R294	QRD167J-331	330 1/6W CARBON	FBS
	R294	QRD167J-331	330 1/6W CARBON	G
	R294	QRD167J-331	330 1/6W CARBON	H
	R295	QRD167J-153	15K 1/6W CARBON	B
	R295	QRD167J-681	680 1/6W CARBON	D
	R295	QRD167J-681	680 1/6W CARBON	E
	R295	QRD167J-681	680 1/6W CARBON	FBS
	R295	QRD167J-681	680 1/6W CARBON	G
	R295	QRD167J-681	680 1/6W CARBON	H
	R296	QRD167J-104	100K 1/6W CARBON	
	R297	QRD167J-562	5.6K 1/6W CARBON	
	R298	QRD167J-562	5.6K 1/6W CARBON	
	R501	QRD167J-272	2.7K 1/6W CARBON	
	R502	QRD167J-272	2.7K 1/6W CARBON	
	R503	QRD167J-272	2.7K 1/6W CARBON	
	R504	QRD167J-272	2.7K 1/6W CARBON	
	R505	QRD167J-272	2.7K 1/6W CARBON	
	R506	QRD167J-272	2.7K 1/6W CARBON	
	R507	QRD167J-272	2.7K 1/6W CARBON	
	R508	QRD167J-272	2.7K 1/6W CARBON	
	R509	QRD167J-272	2.7K 1/6W CARBON	
	R510	QRD167J-272	2.7K 1/6W CARBON	
	R511	QRD167J-272	2.7K 1/6W CARBON	
	R512	QRD167J-272	2.7K 1/6W CARBON	
⚠	R521	QRZ0077-101	100 1/4W FUSIBLE	
⚠	R522	QRZ0077-101	100 1/4W FUSIBLE	
⚠	R523	QRZ0077-100	10 1/4W FUSIBLE	
⚠	R524	QRZ0077-100	10 1/4W FUSIBLE	
	R525	QRD167J-103	10K 1/6W CARBON	
	R526	QRD167J-103	10K 1/6W CARBON	
⚠	R527	QRZ0077-100	10 1/4W FUSIBLE	
⚠	R528	QRZ0077-100	10 1/4W FUSIBLE	
	R531	ERD141J-122S	1.2K 1/4W CARBON	
	R532	ERD141J-122S	1.2K 1/4W CARBON	
	R533	QRD167J-104	100K 1/6W CARBON	
	R534	QRD167J-104	100K 1/6W CARBON	
	R535	QRD167J-122	1.2K 1/6W CARBON	
	R536	QRD167J-122	1.2K 1/6W CARBON	
	R537	QRD167J-104	100K 1/6W CARBON	
	R538	QRD167J-104	100K 1/6W CARBON	
⚠	R539	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R540	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R541	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R542	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R543	QRX014J-R22	0.22 1W M.FILM	
⚠	R544	QRX014J-R22	0.22 1W M.FILM	
	R545	QRD167J-223	22K 1/6W CARBON	
	R546	QRD167J-223	22K 1/6W CARBON	
	R547	QRD167J-223	22K 1/6W CARBON	
	R548	QRD167J-223	22K 1/6W CARBON	
	R549	QRD167J-103	10K 1/6W CARBON	
	R550	QRD167J-103	10K 1/6W CARBON	
	R551	ERD141J-471S	470 1/4W CARBON	
	R552	ERD141J-471S	470 1/4W CARBON	
	R553	QRD167J-104	100K 1/6W CARBON	
	R554	QRD167J-104	100K 1/6W CARBON	
	R555	QRD167J-473	47K 1/6W CARBON	
	R556	QRD167J-473	47K 1/6W CARBON	
	R557	QRD167J-473	47K 1/6W CARBON	
	R558	QRD167J-473	47K 1/6W CARBON	
⚠	R559	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R560	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R561	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R562	QRD14CJ-100S	10 1/4W UNF.CARBON	
⚠	R563	QRX014J-R22	0.22 1W M.FILM	
⚠	R564	QRX014J-R22	0.22 1W M.FILM	
	R565	QRD167J-223	22K 1/6W CARBON	
	R566	QRD167J-223	22K 1/6W CARBON	
	R567	QRD167J-223	22K 1/6W CARBON	
	R568	QRD167J-223	22K 1/6W CARBON	
	R569	QRD167J-103	10K 1/6W CARBON	
	R570	QRD167J-103	10K 1/6W CARBON	
	R573	QRD167J-102	1K 1/6W CARBON	
	R574	QRD167J-102	1K 1/6W CARBON	
	R577	QRD167J-102	1K 1/6W CARBON	
	R578	QRD167J-102	1K 1/6W CARBON	
	R579	QRD167J-103	10K 1/6W CARBON	
	R580	QRD167J-152	1.5K 1/6W CARBON	
	R581	QRD167J-103	10K 1/6W CARBON	
	R582	QRD167J-472	4.7K 1/6W CARBON	
	R583	QRD167J-222	2.2K 1/6W CARBON	
	R584	QRD167J-332	3.3K 1/6W CARBON	
	R585	QRD167J-392	3.9K 1/6W CARBON	
	R586	QRD167J-332	3.3K 1/6W CARBON	
	R587	QRD167J-103	10K 1/6W CARBON	
	R588	QRD167J-153	15K 1/6W CARBON	
	R591	QRD167J-102	1K 1/6W CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R600	QRD167J-750	75 1/6W CARBON	B
	R601	QRD161J-100	10 1/6W CARBON	B
	R604	QRD167J-750	75 1/6W CARBON	
	R605	QRD161J-100	10 1/6W CARBON	
	R606	QRD167J-750	75 1/6W CARBON	
	R607	QRD161J-221	220 1/6W CARBON	
	R608	QRD167J-473	47K 1/6W CARBON	
	R609	QRD167J-750	75 1/6W CARBON	
	R610	QRD167J-473	47K 1/6W CARBON	
	R611	QRD167J-750	75 1/6W CARBON	
⚠	R612	QRZ0077-100	10 1/4W FUSIBLE	
	R613	QRD167J-474	470K 1/6W CARBON	
	R614	QRD167J-474	470K 1/6W CARBON	
	R615	QRD167J-474	470K 1/6W CARBON	
	R616	QRD167J-474	470K 1/6W CARBON	
⚠	R621	QRZ0077-4R7	4.7 1/4W FUSIBLE	
⚠	R622	QRZ0077-4R7	4.7 1/4W FUSIBLE	
⚠	R623	QRZ0077-4R7	4.7 1/4W FUSIBLE	
⚠	R624	QRZ0077-4R7	4.7 1/4W FUSIBLE	
	R901	QRD167J-473	47K 1/6W CARBON	
	R902	QRD167J-104	100K 1/6W CARBON	
	R903	QRD167J-821	820 1/6W CARBON	
	R904	QRD167J-561	560 1/6W CARBON	
	R905	QRD167J-471	470 1/6W CARBON	
	R906	QRD167J-391	390 1/6W CARBON	
	R908	QRD167J-331	330 1/6W CARBON	B
	R908	QRD167J-331	330 1/6W CARBON	D
	R908	QRD167J-331	330 1/6W CARBON	E
	R908	QRD167J-201	200 1/6W CARBON	FBS
	R908	QRD167J-331	330 1/6W CARBON	G
	R908	QRD167J-331	330 1/6W CARBON	H
	R909	QRD167J-331	330 1/6W CARBON	B
	R909	QRD167J-331	330 1/6W CARBON	D
	R909	QRD167J-331	330 1/6W CARBON	E
	R909	QRD167J-201	200 1/6W CARBON	FBS
	R909	QRD167J-331	330 1/6W CARBON	G
	R909	QRD167J-331	330 1/6W CARBON	H
	R911	QRD167J-103	10K 1/6W CARBON	
	R912	QRD167J-103	10K 1/6W CARBON	
	R913	QRD167J-103	10K 1/6W CARBON	
	R914	QRD167J-272	2.7K 1/6W CARBON	
	R915	QRD167J-272	2.7K 1/6W CARBON	
	R916	QRD167J-272	2.7K 1/6W CARBON	
	R917	QRD167J-432	4.3K 1/6W CARBON	
	R918	QRD167J-432	4.3K 1/6W CARBON	
	R919	QRD167J-822	8.2K 1/6W CARBON	
	R920	QRD167J-822	8.2K 1/6W CARBON	
	R921	QRD167J-243	24K 1/6W CARBON	
	R922	QRD167J-243	24K 1/6W CARBON	
	R937	QRD167J-103	10K 1/6W CARBON	
	R938	QRD167J-103	10K 1/6W CARBON	
	R939	QRD167J-103	10K 1/6W CARBON	
	R940	QRD167J-103	10K 1/6W CARBON	
	R941	QRD167J-104	100K 1/6W CARBON	
	R942	QRD167J-223	22K 1/6W CARBON	
	R951	QRD167J-120	12 1/6W CARBON	
	R952	QRD167J-120	12 1/6W CARBON	
	R953	QRD167J-120	12 1/6W CARBON	
	R954	QRD167J-120	12 1/6W CARBON	
	R990	QRD167J-392	3.9K 1/6W CARBON	
	VR202	QVGA81B-E54B	50K VARIABLE	B
	VR202	QVGA81W-E15D	100K VARIABLE	D
	VR202	QVGA81W-E15D	100K VARIABLE	E
	VR202	QVGA81W-E15D	100K VARIABLE	FBS
	VR202	QVGA81W-E15D	100K VARIABLE	G
	VR202	QVGA81W-E15D	100K VARIABLE	H
	VR203	QVAB80B-E54C	50K VARIABLE	
	VR204	QVJB81A-E14B	10K VARIABLE	

⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	J	EMV7112-003	CONNECTOR	
	J001	EMV7112-003	CONNECTOR	
	J306	QMS3L10-ED0H	MINI JACK(HEADPHONE)	
	J307	QMS3L10-ED0H	MINI JACK(MIC)	
	J600	EMN00YV-205A	2P PIN JACK(MONITOR OUT, VIDEO)	
	J601	EMN00YV-304A	3P PIN JACK(VCR PLAY/REC, CD-G)	B
	J601	EMN00YV-205A	2P PIN JACK(VCR PLAY/REC)	D
	J601	EMN00YV-205A	2P PIN JACK(VCR PLAY/REC)	E
	J601	EMN00YV-205A	2P PIN JACK(VCR PLAY/REC)	FBS
	J601	EMN00YV-205A	2P PIN JACK(VCR PLAY/REC)	G
	J601	EMN00YV-205A	2P PIN JACK(VCR PLAY/REC)	H
	L501	EQL0001-R45	INDUCTOR	
	L502	EQL0001-R45	INDUCTOR	
	L503	EQL0001-R45	INDUCTOR	
	L504	EQL0001-R45	INDUCTOR	
	S911	ESP0001-023M	TACT SWITCH(AI LOUDNESS)	
	S912	ESP0001-023M	TACT SWITCH(SOURCE DIRECT)	
	S913	ESP0001-023M	TACT SWITCH(TUNER ENTRY)	
	S914	ESP0001-023M	TACT SWITCH(VIDEO)	
	S915	ESP0001-023M	TACT SWITCH(VCR)	

⚠ : SAFETY PARTS

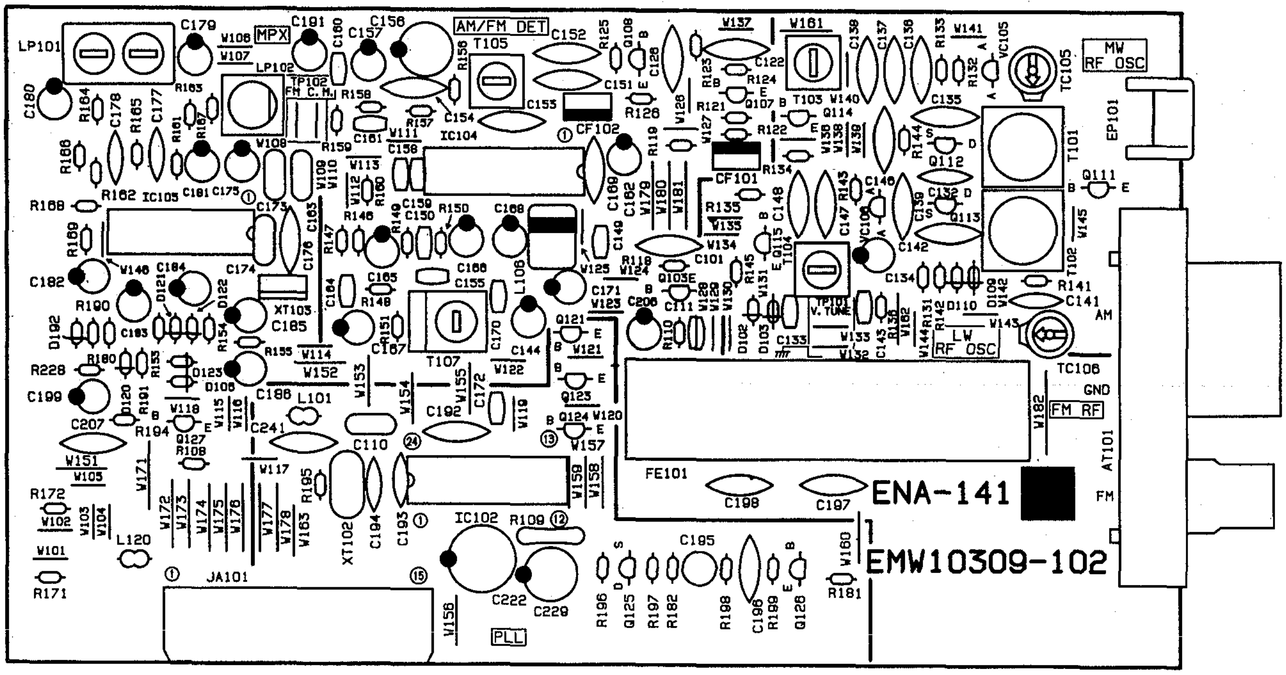
Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	S916	ESP0001-023M	TACT SWITCH(AI SLEEP)	
	S917	ESP0001-023M	TACT SWITCH(CD/CD-G)	
	S918	ESP0001-023M	TACT SWITCH(PHONO)	
	S919	ESP0001-023M	TACT SWITCH(AUX)	
	S920	ESP0001-023M	TACT SWITCH(TUNER)	
	S921	ESP0001-023M	TACT SWITCH(TAPE)	
	S922	ESP0001-023M	TACT SWITCH(POWER)	
	S931	ESP0001-023M	TACT SWITCH(WAKE UP/SLEEP)	
	S932	ESP0001-023M	TACT SWITCH(ONCE TIMER)	
	S933	ESP0001-023M	TACT SWITCH(DAILY TIMER)	
	S934	ESP0001-023M	TACT SWITCH(REC TIMER)	
	S935	ESP0001-023M	TACT SWITCH(CLOCK ADJ)	
	S936	ESP0001-023M	TACT SWITCH(CANCEL)	
	S937	ESP0001-023M	TACT SWITCH(MEMORY)	
	S938	ESP0001-023M	TACT SWITCH(UP)	
	S939	ESP0001-023M	TACT SWITCH(DOWN)	
	S940	ESP0001-023M	TACT SWITCH(PRESET UP)	
	S941	ESP0001-023M	TACT SWITCH(PRESET DOWN)	
	S942	ESP0001-023M	TACT SWITCH(AUTO MEMORY)	
	S943	ESP0001-023M	TACT SWITCH(AUTO /MONO)	
	S944	ESP0001-023M	TACT SWITCH(FM)	
	S945	ESP0001-023M	TACT SWITCH(AM)	
	BC302	EWS293-0145	SOCKET WIRE(3PIN) ECHO VOLUME	B
	BC302	EWS293-0132	SOCKET WIRE(3PIN) BALANCE	D
	BC302	EWS293-0132	SOCKET WIRE(3PIN) BALANCE	E
	BC302	EWS293-0132	SOCKET WIRE(3PIN) BALANCE	FBS
	BC302	EWS293-0132	SOCKET WIRE(3PIN) BALANCE	G
	BC302	EWS293-0132	SOCKET WIRE(3PIN) BALANCE	H
	BK901	E308192-001	FL HOLDER	
	FL901	ELU0001-139	FL TUBE	
	FS901	E306805-014	FELT SPACER	
	FT001	EMG7331-002U	FUSE CLIP	
	FT002	EMG7331-002	FUSE CLIP	
	FT003	EMG7331-002	FUSE CLIP	
	FT004	EMG7331-002U	FUSE CLIP	
	FT005	EMG7331-002	FUSE CLIP	
	FT006	EMG7331-002U	FUSE CLIP	
	FT007	EMG7331-002	FUSE CLIP	B
	FT008	EMG7331-002U	FUSE CLIP	B
	FW303	EWR33B-10LST	FLAT WIRE(3PIN) TWIN BASS	
	FW304	EWR37B-08LST	FLAT WIRE(7PIN) MIC AMPLIFIER	
	FW305	EWR34B-10LST	FLAT WIRE(4PIN) HEADPHONE	
	FW441	EWR33B-25LST	FLAT WIRE(3PIN) TO MIC AMPLIFIER CB	B
	FW801	EWR33B-10SST	FLAT WIRE(3PIN) POWER PRIMARY	
	FW803	EWR36B-10LST	FLAT WIRE(6PIN) POWER PRIMARY	
	JA501	EMV7125-010R	CONNECTOR(10PIN) Lch AMPLIFIER	
	JA502	EMV7125-010R	CONNECTOR(10PIN) Rch AMPLIFIER	
	JA503	EMV7125-012R	CONNECTOR(12PIN) REGULATOR	
	JA600	EMV7125-004R	CONNECTOR(4PIN) VIDEO SELECTOR CB	
	JA801	EMV7125-005R	CONNECTOR(27PIN) POWER SECONDARY	
	JA901	EMV7123-027R	CONNECTOR(27PIN) FRONT CB	
	PA990	EMV5103-002B	PLUG ASSY(2PIN) VOLUME INDICATOR	
	TB001	EMZ4001-001	TAB	
	TB002	EMZ4001-001	TAB	
	TC901	ENZ1003-015	TRIMMER	
	XT901	ECX4194-304CF	RESONATOR	

⚠ : SAFETY PARTS

■ENA-141☐ Tuner PC Board Ass'y

Note : ENA-141☐ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENA-141 B	Taiwan, Universal Type
ENA-141 C	Australia
ENA-141 D	Scandinavia Continental Europe
ENA-141 E	Germany
ENA-141 F	the U.K.
ENA-141 G	Italy

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
	Q103	2SC461(B,C)	SILICON	HITACHI	
	Q107	2SC535(B,C)	SILICON	HITACHI	
	Q108	2SC461(B,C)	SILICON	HITACHI	
	Q111	2SD2144S(VW)	SILICON	ROHM	D
	Q111	2SD2144S(VW)	SILICON	ROHM	E
	Q111	2SD2144S(VW)	SILICON	ROHM	F
	Q111	2SD2144S(VW)	SILICON	ROHM	G
	Q112	2SK301(Q,R)	F.E.T	MATSUSHITA	
	Q113	2SK301(Q,R)	F.E.T	MATSUSHITA	D
	Q113	2SK301(Q,R)	F.E.T	MATSUSHITA	E
	Q113	2SK301(Q,R)	F.E.T	MATSUSHITA	F
	Q113	2SK301(Q,R)	F.E.T	MATSUSHITA	G
	Q114	2SK301(P,Q)	F.E.T	MATSUSHITA	D
	Q114	2SK301(P,Q)	F.E.T	MATSUSHITA	E
	Q114	2SK301(P,Q)	F.E.T	MATSUSHITA	F
	Q114	2SK301(P,Q)	F.E.T	MATSUSHITA	G
	Q115	2SK301(P,Q)	F.E.T	MATSUSHITA	D
	Q115	2SK301(P,Q)	F.E.T	MATSUSHITA	E
	Q115	2SK301(P,Q)	F.E.T	MATSUSHITA	F
	Q115	2SK301(P,Q)	F.E.T	MATSUSHITA	G
	Q121	DTA144ES	SILICON	ROHM	D
	Q121	DTA144ES	SILICON	ROHM	E
	Q121	DTA144ES	SILICON	ROHM	F
	Q121	DTA144ES	SILICON	ROHM	G
	Q123	DTA144ES	SILICON	ROHM	
	Q124	DTA144ES	SILICON	ROHM	
	Q125	2SK301(Q2)	F.E.T	MATSUSHITA	
	Q126	2SC458(D)	SILICON	HITACHI	
	Q127	DTC144ES	SILICON	ROHM	

⚠ : SAFETY PARTS

I.C.s

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
	IC102	LC7218	I.C.	SANYO	
	IC104	LA1266A	I.C.	SANYO	
	IC105	LA3401	I.C.	SANYO	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
	D102	1SS119	SILICON	HITACHI	D
	D102	1SS119	SILICON	HITACHI	E
	D102	1SS119	SILICON	HITACHI	F
	D102	1SS119	SILICON	HITACHI	G
	D103	1SS119	SILICON	HITACHI	D
	D103	1SS119	SILICON	HITACHI	E
	D103	1SS119	SILICON	HITACHI	F
	D103	1SS119	SILICON	HITACHI	G
	D106	1SS119	SILICON	HITACHI	
	D109	1SS119	SILICON	HITACHI	D
	D109	1SS119	SILICON	HITACHI	E
	D109	1SS119	SILICON	HITACHI	F
	D109	1SS119	SILICON	HITACHI	G
	D110	1SS119	SILICON	HITACHI	D
	D110	1SS119	SILICON	HITACHI	E
	D110	1SS119	SILICON	HITACHI	F
	D110	1SS119	SILICON	HITACHI	G
	D120	1SS119	SILICON	HITACHI	
	D121	1SS119	SILICON	HITACHI	
	D122	1SS119	SILICON	HITACHI	
	D123	1SS119	SILICON	HITACHI	
	D192	MTZ5.1JC	ZENER	ROHM	
	VC105	SVC342(L)	VARICAP	SANYO	
	VC106	SVC342(L)	VARICAP	SANYO	D
	VC106	SVC342(L)	VARICAP	SANYO	E
	VC106	SVC342(L)	VARICAP	SANYO	F
	VC106	SVC342(L)	VARICAP	SANYO	G

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C101	QCF21HP-223	0.022MF	50V	CERAMIC	
	C110	QCZ0202-155	1.5MF	25V	CERAMIC	
	C122	QCF21HP-223	0.022MF	50V	CERAMIC	
	C126	QCF21HP-223	0.022MF	50V	CERAMIC	
	C132	QCS21HJ-561	560PF	50V	CERAMIC	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C133	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C134	QETB1EM-106	10MF 25V ELECTRO	
	C135	QCC21EM-223	0.022MF 25V CERAMIC	
	C136	QCT26CH-180	18PF 50V CERAMIC	
	C137	QCT26CH-221	220PF 50V CERAMIC	
	C138	QCT26CH-241	240PF 50V CERAMIC	
	C139	QCC21EM-223	0.022MF 25V CERAMIC	D
	C139	QCC21EM-223	0.022MF 25V CERAMIC	E
	C139	QCC21EM-223	0.022MF 25V CERAMIC	F
	C139	QCC21EM-223	0.022MF 25V CERAMIC	G
	C141	QCS21HJ-270	27PF 50V CERAMIC	D
	C141	QCS21HJ-270	27PF 50V CERAMIC	E
	C141	QCS21HJ-270	27PF 50V CERAMIC	F
	C141	QCS21HJ-270	27PF 50V CERAMIC	G
	C142	QCY21HK-272	2700PF 50V CERAMIC	D
	C142	QCY21HK-272	2700PF 50V CERAMIC	E
	C142	QCY21HK-272	2700PF 50V CERAMIC	F
	C142	QCY21HK-272	2700PF 50V CERAMIC	G
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	D
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	E
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	F
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	G
	C144	QETB1EM-106	10MF 25V ELECTRO	D
	C144	QETB1EM-106	10MF 25V ELECTRO	E
	C144	QETB1EM-106	10MF 25V ELECTRO	F
	C144	QETB1EM-106	10MF 25V ELECTRO	G
	C146	QCT26CH-680	68PF 50V CERAMIC	D
	C146	QCT26CH-680	68PF 50V CERAMIC	E
	C146	QCT26CH-680	68PF 50V CERAMIC	F
	C146	QCT26CH-680	68PF 50V CERAMIC	G
	C147	QCT26CH-220	22PF 50V CERAMIC	D
	C147	QCT26CH-220	22PF 50V CERAMIC	E
	C147	QCT26CH-220	22PF 50V CERAMIC	F
	C147	QCT26CH-220	22PF 50V CERAMIC	G
	C148	QCT26CH-121	120PF 50V CERAMIC	D
	C148	QCT26CH-121	120PF 50V CERAMIC	E
	C148	QCT26CH-121	120PF 50V CERAMIC	F
	C148	QCT26CH-121	120PF 50V CERAMIC	G
	C149	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C150	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C151	QCF21HP-223	0.022MF 50V CERAMIC	
	C152	QCF21HP-223	0.022MF 50V CERAMIC	
	C153	QCC21EM-223	0.022MF 25V CERAMIC	
	C154	QCF21HP-223	0.022MF 50V CERAMIC	
	C155	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C156	QETB1CM-227	220MF 16V ELECTRO	
	C157	QETB1HM-474	0.47MF 50V ELECTRO	
	C158	QCBB1HK-101	100PF 50V CERAMIC	
	C159	QCBB1HK-101	100PF 50V CERAMIC	
	C160	QCBB1HK-221	220PF 50V CERAMIC	
	C161	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C162	QETB1EM-106	10MF 25V ELECTRO	
	C163	QFLB1HJ-102	1000PF 50V MYLAR	
	C164	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C165	QETB1HM-474	0.47MF 50V ELECTRO	
	C166	QETB1HM-225	2.2MF 50V ELECTRO	
	C167	QETB1HM-225	2.2MF 50V ELECTRO	
	C168	QETB1HM-475	4.7MF 50V ELECTRO	
	C169	QCF21HP-223	0.022MF 50V CERAMIC	
	C170	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C171	QETB1EM-106	10MF 25V ELECTRO	
	C172	QCVB1CM-103	0.01MF 16V CERAMIC	
	C173	QFLB1HJ-393	0.039MF 50V MYLAR	B
	C173	QFLB1HJ-223	0.022MF 50V MYLAR	C
	C173	QFLB1HJ-223	0.022MF 50V MYLAR	D
	C173	QFLB1HJ-223	0.022MF 50V MYLAR	E
	C173	QFLB1HJ-223	0.022MF 50V MYLAR	F
	C173	QFLB1HJ-223	0.022MF 50V MYLAR	G
	C174	QFLB1HJ-473	0.047MF 50V MYLAR	
	C175	QETB1EM-106	10MF 25V ELECTRO	
	C176	QCY21HK-102	1000PF 50V CERAMIC	
	C177	QCS21HJ-821	820PF 50V CERAMIC	B
	C177	QCS21HJ-561	560PF 50V CERAMIC	C
	C177	QCS21HJ-561	560PF 50V CERAMIC	D
	C177	QCS21HJ-561	560PF 50V CERAMIC	E
	C177	QCS21HJ-821	820PF 50V CERAMIC	F
	C177	QCS21HJ-561	560PF 50V CERAMIC	G
	C178	QCS21HJ-821	820PF 50V CERAMIC	B
	C178	QCS21HJ-561	560PF 50V CERAMIC	C
	C178	QCS21HJ-561	560PF 50V CERAMIC	D
	C178	QCS21HJ-561	560PF 50V CERAMIC	E
	C178	QCS21HJ-821	820PF 50V CERAMIC	F
	C178	QCS21HJ-561	560PF 50V CERAMIC	G
	C179	QETB1HM-225	2.2MF 50V ELECTRO	
	C180	QETB1HM-225	2.2MF 50V ELECTRO	
	C181	QETB1EM-106	10MF 25V ELECTRO	
	C182	QETB1HM-225	2.2MF 50V ELECTRO	
	C183	QETB1HM-105	1MF 50V ELECTRO	
	C184	QETB1HM-105	1MF 50V ELECTRO	
	C185	QETB1HM-225	2.2MF 50V ELECTRO	
	C186	QETB1HM-474	0.47MF 50V ELECTRO	
	C191	QETB1HM-475	4.7MF 50V ELECTRO	
	C192	QCC21EM-473	0.047MF 25V CERAMIC	
	C193	QCS21HJ-180	18PF 50V CERAMIC	
	C194	QCS21HJ-180	18PF 50V CERAMIC	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C195	QENB1HM-474	0.47MF 50V NON POLE	
	C196	QCY21HK-102	1000PF 50V CERAMIC	
	C197	QCF21HP-223	0.022MF 50V CERAMIC	
	C198	QCF21HP-103	0.01MF 50V CERAMIC	
	C199	QETB1HM-475	4.7MF 50V ELECTRO	
	C206	QETB1HM-476	47MF 50V ELECTRO	E
	C206	QETB1HM-476	47MF 50V ELECTRO	G
	C207	QCF21HP-223	0.022MF 50V CERAMIC	
	C222	QETB1CM-477	470MF 16V ELECTRO	
	C229	QETB1CM-227	220MF 16V ELECTRO	
	C241	QCF21HP-223	0.022MF 50V CERAMIC	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R108	QRD167J-103	10K 1/6W CARBON	
⚠	R109	QRZ0077-680	68 1/4W FUSIBLE	
	R118	QRD167J-332	3.3K 1/6W CARBON	
	R119	QRD161J-221	220 1/6W CARBON	
	R121	QRD167J-391	390 1/6W CARBON	
	R122	QRD167J-272	2.7K 1/6W CARBON	
	R123	QRD167J-102	1K 1/6W CARBON	
	R124	QRD167J-681	680 1/6W CARBON	
	R125	QRD167J-332	3.3K 1/6W CARBON	
	R126	QRD161J-221	220 1/6W CARBON	
	R131	QRD167J-331	330 1/6W CARBON	
	R132	QRD167J-103	10K 1/6W CARBON	
	R133	QRD167J-473	47K 1/6W CARBON	
	R134	QRD167J-103	10K 1/6W CARBON	D
	R134	QRD167J-103	10K 1/6W CARBON	E
	R134	QRD167J-103	10K 1/6W CARBON	F
	R134	QRD167J-103	10K 1/6W CARBON	G
	R135	QRD167J-470	47 1/6W CARBON	
	R136	QRD167J-103	10K 1/6W CARBON	
	R141	QRD167J-472	4.7K 1/6W CARBON	D
	R141	QRD167J-472	4.7K 1/6W CARBON	E
	R141	QRD167J-472	4.7K 1/6W CARBON	F
	R141	QRD167J-472	4.7K 1/6W CARBON	G
	R142	QRD167J-331	330 1/6W CARBON	D
	R142	QRD167J-331	330 1/6W CARBON	E
	R142	QRD167J-331	330 1/6W CARBON	F
	R142	QRD167J-331	330 1/6W CARBON	G
	R143	QRD167J-103	10K 1/6W CARBON	D
	R143	QRD167J-103	10K 1/6W CARBON	E
	R143	QRD167J-103	10K 1/6W CARBON	F
	R143	QRD167J-103	10K 1/6W CARBON	G
	R144	QRD167J-473	47K 1/6W CARBON	D
	R144	QRD167J-473	47K 1/6W CARBON	E
	R144	QRD167J-473	47K 1/6W CARBON	F
	R144	QRD167J-473	47K 1/6W CARBON	G
	R145	QRD167J-103	10K 1/6W CARBON	D
	R145	QRD167J-103	10K 1/6W CARBON	E
	R145	QRD167J-103	10K 1/6W CARBON	F
	R145	QRD167J-103	10K 1/6W CARBON	G
	R146	QRD167J-560	56 1/6W CARBON	
	R147	QRD167J-103	10K 1/6W CARBON	
	R148	QRD167J-103	10K 1/6W CARBON	
	R149	QRD167J-223	22K 1/6W CARBON	B
	R149	QRD167J-223	22K 1/6W CARBON	C
	R149	QRD167J-223	22K 1/6W CARBON	D
	R149	QRD167J-273	27K 1/6W CARBON	E
	R149	QRD167J-223	22K 1/6W CARBON	F
	R149	QRD167J-273	27K 1/6W CARBON	G
	R150	QRD167J-103	10K 1/6W CARBON	
	R151	QRD167J-222	2.2K 1/6W CARBON	
	R153	QRD167J-103	10K 1/6W CARBON	
	R154	QRD167J-103	10K 1/6W CARBON	
	R155	QRD167J-562	5.6K 1/6W CARBON	
	R156	QRD167J-822	8.2K 1/6W CARBON	
	R157	QRD167J-103	10K 1/6W CARBON	
	R158	QRD167J-273	27K 1/6W CARBON	
	R159	QRD167J-561	560 1/6W CARBON	
	R160	QRD167J-562	5.6K 1/6W CARBON	B
	R160	QRD167J-103	10K 1/6W CARBON	C
	R160	QRD167J-103	10K 1/6W CARBON	D
	R160	QRD167J-103	10K 1/6W CARBON	E
	R160	QRD167J-102	1K 1/6W CARBON	F
	R160	QRD167J-103	10K 1/6W CARBON	G
	R161	QRD167J-823	82K 1/6W CARBON	B
	R161	QRD167J-104	100K 1/6W CARBON	C
	R161	QRD167J-104	100K 1/6W CARBON	D
	R161	QRD167J-104	100K 1/6W CARBON	E
	R161	QRD167J-683	68K 1/6W CARBON	F
	R161	QRD167J-104	100K 1/6W CARBON	G
	R162	QRD167J-823	82K 1/6W CARBON	B
	R162	QRD167J-104	100K 1/6W CARBON	C
	R162	QRD167J-104	100K 1/6W CARBON	D
	R162	QRD167J-104	100K 1/6W CARBON	E
	R162	QRD167J-683	68K 1/6W CARBON	F
	R162	QRD167J-104	100K 1/6W CARBON	G

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R163	QRD167J-472	4.7K 1/6W CARBON	B
	R163	QRD167J-332	3.3K 1/6W CARBON	C
	R163	QRD167J-332	3.3K 1/6W CARBON	D
	R163	QRD167J-332	3.3K 1/6W CARBON	E
	R163	QRD167J-332	3.3K 1/6W CARBON	F
	R163	QRD167J-332	3.3K 1/6W CARBON	G
	R164	QRD167J-472	4.7K 1/6W CARBON	B
	R164	QRD167J-332	3.3K 1/6W CARBON	C
	R164	QRD167J-332	3.3K 1/6W CARBON	D
	R164	QRD167J-332	3.3K 1/6W CARBON	E
	R164	QRD167J-332	3.3K 1/6W CARBON	F
	R164	QRD167J-332	3.3K 1/6W CARBON	G
	R165	QRD167J-184	180K 1/6W CARBON	B
	R165	QRD167J-274	270K 1/6W CARBON	C
	R165	QRD167J-274	270K 1/6W CARBON	D
	R165	QRD167J-274	270K 1/6W CARBON	E
	R165	QRD167J-274	270K 1/6W CARBON	F
	R165	QRD167J-274	270K 1/6W CARBON	G
	R166	QRD167J-184	180K 1/6W CARBON	B
	R166	QRD167J-274	270K 1/6W CARBON	C
	R166	QRD167J-274	270K 1/6W CARBON	D
	R166	QRD167J-274	270K 1/6W CARBON	E
	R166	QRD167J-274	270K 1/6W CARBON	F
	R166	QRD167J-274	270K 1/6W CARBON	G
	R167	QRD167J-393	39K 1/6W CARBON	B
	R167	QRD167J-473	47K 1/6W CARBON	C
	R167	QRD167J-473	47K 1/6W CARBON	D
	R167	QRD167J-473	47K 1/6W CARBON	E
	R167	QRD167J-473	47K 1/6W CARBON	F
	R167	QRD167J-473	47K 1/6W CARBON	G
	R168	QRD167J-103	10K 1/6W CARBON	
	R169	QRD167J-103	10K 1/6W CARBON	
	R171	QRD167J-682	6.8K 1/6W CARBON	
	R172	QRD167J-682	6.8K 1/6W CARBON	
	R180	QRD167J-103	10K 1/6W CARBON	
	R181	QRD167J-222	2.2K 1/6W CARBON	
	R182	QRD167J-181	180 1/6W CARBON	
	R190	QRD167J-103	10K 1/6W CARBON	
	R191	QRD167J-562	5.6K 1/6W CARBON	
	R194	QRD167J-103	10K 1/6W CARBON	
	R195	QRD167J-473	47K 1/6W CARBON	
	R196	QRD167J-103	10K 1/6W CARBON	B
	R196	QRD167J-103	10K 1/6W CARBON	C
	R196	QRD167J-222	2.2K 1/6W CARBON	D
	R196	QRD167J-222	2.2K 1/6W CARBON	E
	R196	QRD167J-222	2.2K 1/6W CARBON	F
	R196	QRD167J-222	2.2K 1/6W CARBON	G
	R197	QRD167J-222	2.2K 1/6W CARBON	
	R198	QRD167J-332	3.3K 1/6W CARBON	B
	R198	QRD167J-332	3.3K 1/6W CARBON	C
	R198	QRD167J-822	8.2K 1/6W CARBON	D
	R198	QRD167J-822	8.2K 1/6W CARBON	E
	R198	QRD167J-822	8.2K 1/6W CARBON	F
	R198	QRD167J-822	8.2K 1/6W CARBON	G
	R199	QRD167J-472	4.7K 1/6W CARBON	
	R228	QRD167J-222	2.2K 1/6W CARBON	

⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	L101	EQL4004-1R0	INDUCTOR	
	L106	EQL3001-102K	INDUCTOR	
	L110	EQL4004-100	INDUCTOR	E
	L110	EQL4004-100	INDUCTOR	G
	L120	EQL4004-1R0	INDUCTOR	
	T101	EQR1111-014	AM RF COIL	
	T102	EQR1111-005	AM RF COIL	D
	T102	EQR1111-005	AM RF COIL	E
	T102	EQR1111-005	AM RF COIL	F
	T102	EQR1111-005	AM RF COIL	G
	T103	EQR1207-017	MW OSC COIL	
	T104	EQR1307-010	LW OSC COIL	D
	T104	EQR1307-010	LW OSC COIL	E
	T104	EQR1307-010	LW OSC COIL	F
	T104	EQR1307-010	LW OSC COIL	G
	T105	EQT2140-017	I.F. TRANSFORMER	
	T107	ECB1560-010	CERAMIC FILTER	
	AT101	EMB41YV-301K	ANTENNA TERMINAL	
	CF101	ECB2123-006R	CERAMIC FILTER	B
	CF101	ECB2123-006R	CERAMIC FILTER	C
	CF101	ECB2118-007R	CERAMIC FILTER	D
	CF101	ECB2118-007R	CERAMIC FILTER	E
	CF101	ECB2118-007R	CERAMIC FILTER	F
	CF101	ECB2118-007R	CERAMIC FILTER	G
	CF102	ECB2123-006R	CERAMIC FILTER	B
	CF102	ECB2123-006R	CERAMIC FILTER	C
	CF102	ECB2118-007R	CERAMIC FILTER	D
	CF102	ECB2118-007R	CERAMIC FILTER	E
	CF102	ECB2118-007R	CERAMIC FILTER	F
	CF102	ECB2118-007R	CERAMIC FILTER	G

⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	EP101	E70225-001	EARTH PLATE	
	FE101	EAF2203-001	FRONT END	B
	FE101	EAF2203-001	FRONT END	C
	FE101	EAF2203-001	FRONT END	D
	FE101	EAF2203-003	FRONT END	E
	FE101	EAF2203-001	FRONT END	F
	FE101	EAF2203-003	FRONT END	G
	JA101	EMV7140-L15R	CONNECTOR(15PIN)	
	LP101	EQF0101-002	LOW PASS FILTER	
	LP102	EQF0102-001	LOW PASS FILTER	E
	LP102	EQF0102-001	LOW PASS FILTER	G
	TC105	ENZ1003-006	TRIMMER	
	TC106	ENZ1003-006	TRIMMER	D
	TC106	ENZ1003-006	TRIMMER	E
	TC106	ENZ1003-006	TRIMMER	F
	TC106	ENZ1003-006	TRIMMER	G
	XT102	ECX0007-200KC	RESONATOR	
	XT103	ECX0000-456KR	RESONATOR	

⚠ : SAFETY PARTS

Accessories List

⚠	Part Number	Part Name	Q'ty	Description	Areas
	E30580-1986A	INSTRUCTION BOOK	1		U
	E30580-1986A	INSTRUCTION BOOK	1		UT
	E30580-1987A	INSTRUCTION BOOK	1		A
	E30580-1987ABS	INSTRUCTION BOOK	1		BS
	E30580-1988A	INSTRUCTION BOOK	1		G
	E30580-1988A	INSTRUCTION BOOK	1		GI
	E30580-1988A	INSTRUCTION BOOK	1		EF
	E30580-1989A	INSTRUCTION BOOK	1		EN
	BT-20122	WARRANTY CARD	1		A
	BT-20122-1	STICKER	1		A
	BT20060	WARRANTY CARD	1		BS
	BT-20134	WARRANTY CARD	1		G
	BT-20066A	EEC AGNECY	1		BS
	E43486-340A	SAFETY SHEET	1		BS
⚠	E04056	SIEMENS PLUG	1		U
⚠	E04056	SIEMENS PLUG	1		UT
	E35497-019	CAUTION SHEET	1	220V	U
	E35497-019	CAUTION SHEET	1	220V	UT
	E306858-002	CAUTION SHEET	1		UT
	EMZ2001-014	ADAPTOR	1		A
	EMZ2001-014	ADAPTOR	1		BS
	EMZ2001-014	ADAPTOR	1		EF
	EMZ2001-014	ADAPTOR	1		EN
	EMZ2001-014	ADAPTOR	1		GI
	EMZ2001-014	ADAPTOR	1		U
	EMZ2001-014	ADAPTOR	1		UT
	EWP502-005K	BILT-IN ANTENNA	1		A
	EWP502-005K	BILT-IN ANTENNA	1		BS
	EWP502-005K	BILT-IN ANTENNA	1		EF
	EWP502-005K	BILT-IN ANTENNA	1		EN
	EWP502-005K	BILT-IN ANTENNA	1		GI
	EWP502-005K	BILT-IN ANTENNA	1		U
	EWP502-005K	BILT-IN ANTENNA	1		UT
	E67007-001	WIRE ANTENNA	1		G
	EQB4001-015	LOOP ANTENNA	1		
	EWP902-031	PLUG CORD ASSY	2		
	RM-SEMXG7U	REMOTE CONTROLLER	1		A
	RM-SEMXG7U	REMOTE CONTROLLER	1		BS
	RM-SEMXG7U	REMOTE CONTROLLER	1		EF
	RM-SEMXG7U	REMOTE CONTROLLER	1		EN
	RM-SEMXG7U	REMOTE CONTROLLER	1		G
	RM-SEMXG7U	REMOTE CONTROLLER	1		GI
	RM-SEMXG7XU	REMOTE CONTROLLER	1		U
	RM-SEMXG7XU	REMOTE CONTROLLER	1		UT
	UM-4NJ-2PSA	BATTERY	1		
	E43486-519A	CAUTION SHEET	1		
	QPGA025-03505	ENVELOPE	1		A
	QPGA025-03505	ENVELOPE	1		EF
	QPGA025-03505	ENVELOPE	1		EN
	QPGA025-03505	ENVELOPE	1		G
	QPGA025-03505	ENVELOPE	1		GI
	QPGA025-03505	ENVELOPE	1		U
	QPGA025-03505	ENVELOPE	1		UT
	QPGA025-03505B	ENVELOPE	1		BS

⚠ SAFETY PARTS

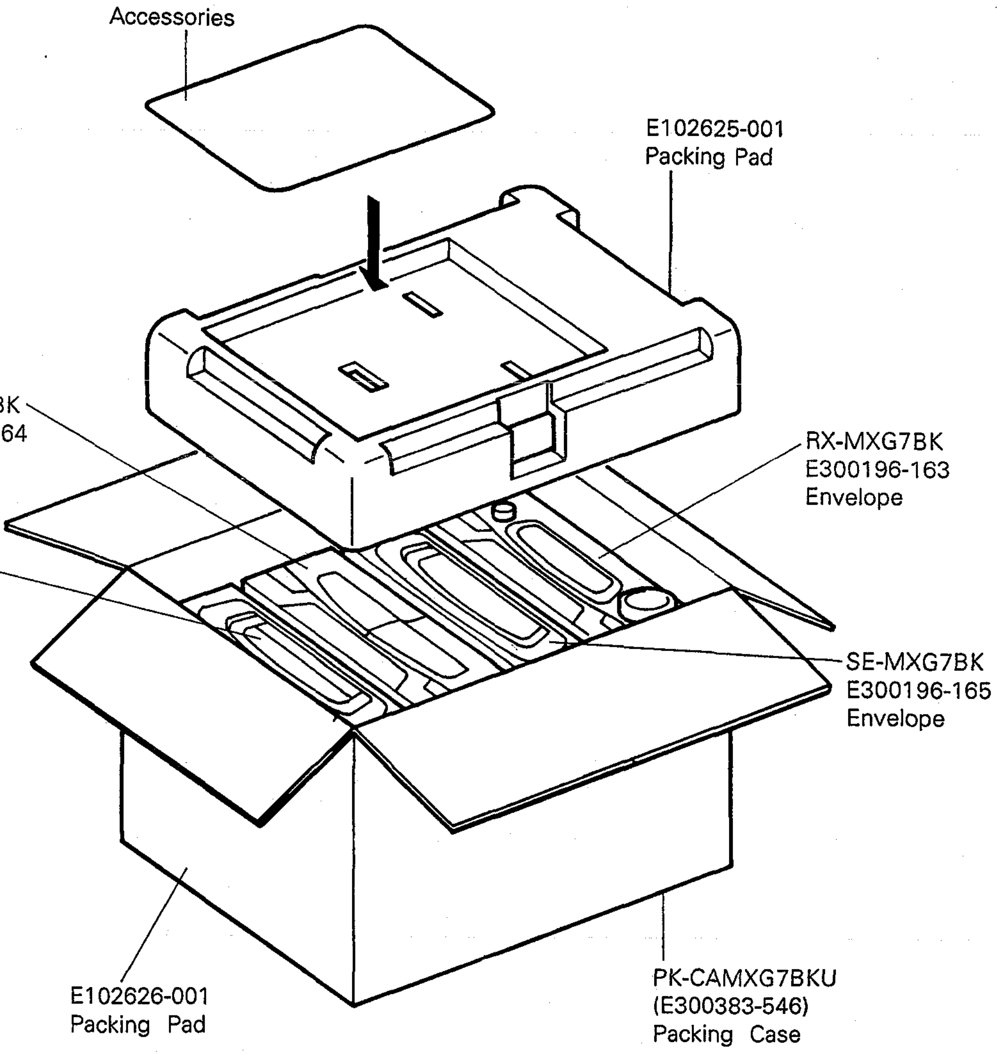
The Marks for Designated Areas

A	Australia	EN	Scandinavia	EF	Continental Europe
BS	the U.K.	G	Germany	GI	Itary
UT	Taiwan	U	Universal Type		

No mark indicates all areas.

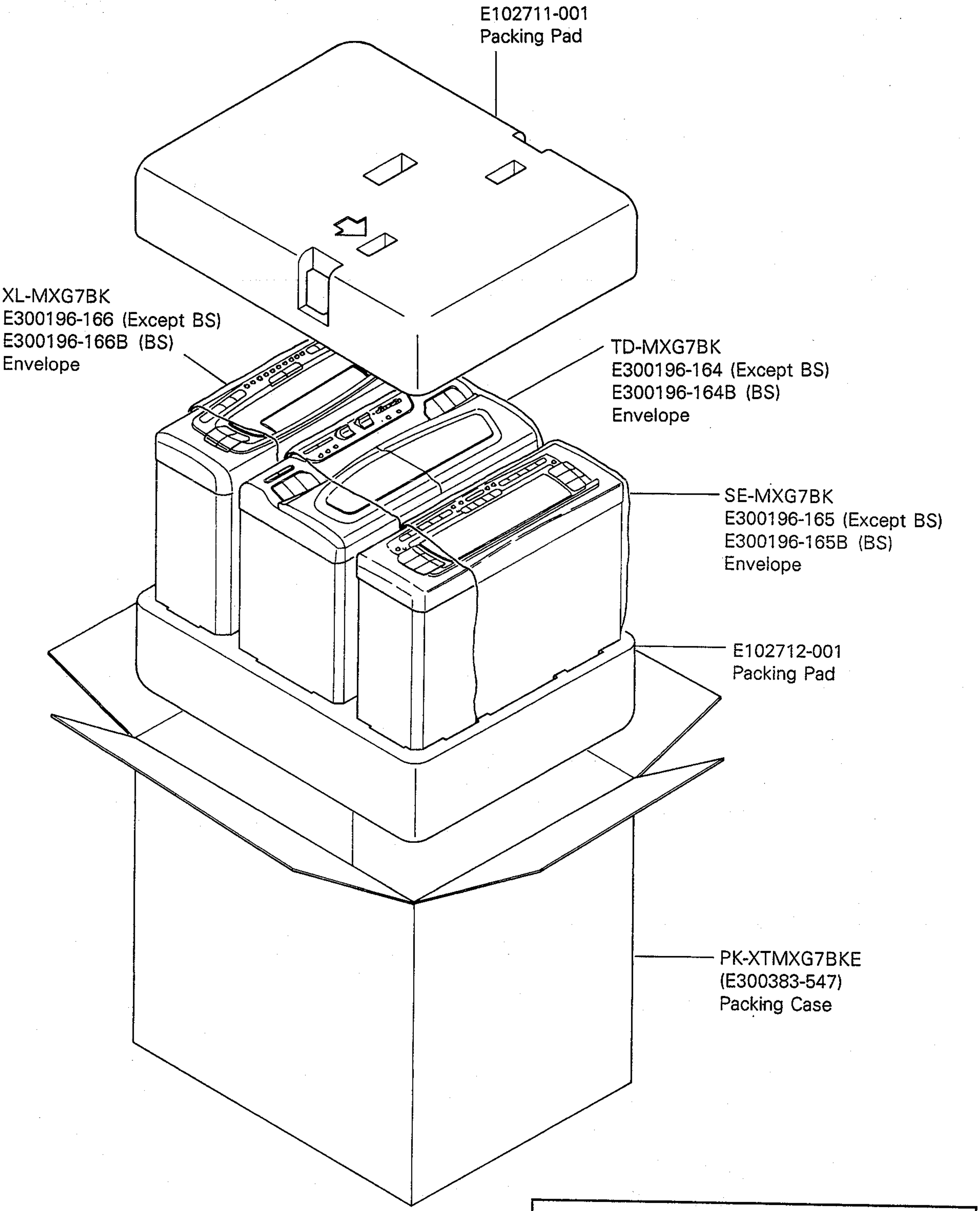
Packing Materials and Part Numbers

■ CA-MXG7BK (U , UT)


Accessories
E102625-001
Packing Pad
TD-MXG7BK
E300196-164
Envelope
RX-MXG7BK
E300196-163
Envelope
XL-MXG7BK
E300196-166
Envelope
SE-MXG7BK
E300196-165
Envelope
E102626-001
Packing Pad
PK-CAMXG7BKU
(E300383-546)
Packing Case

The Marks for Designated Areas
UT .... Taiwan U ..... Universal Type No mark indicates all areas.

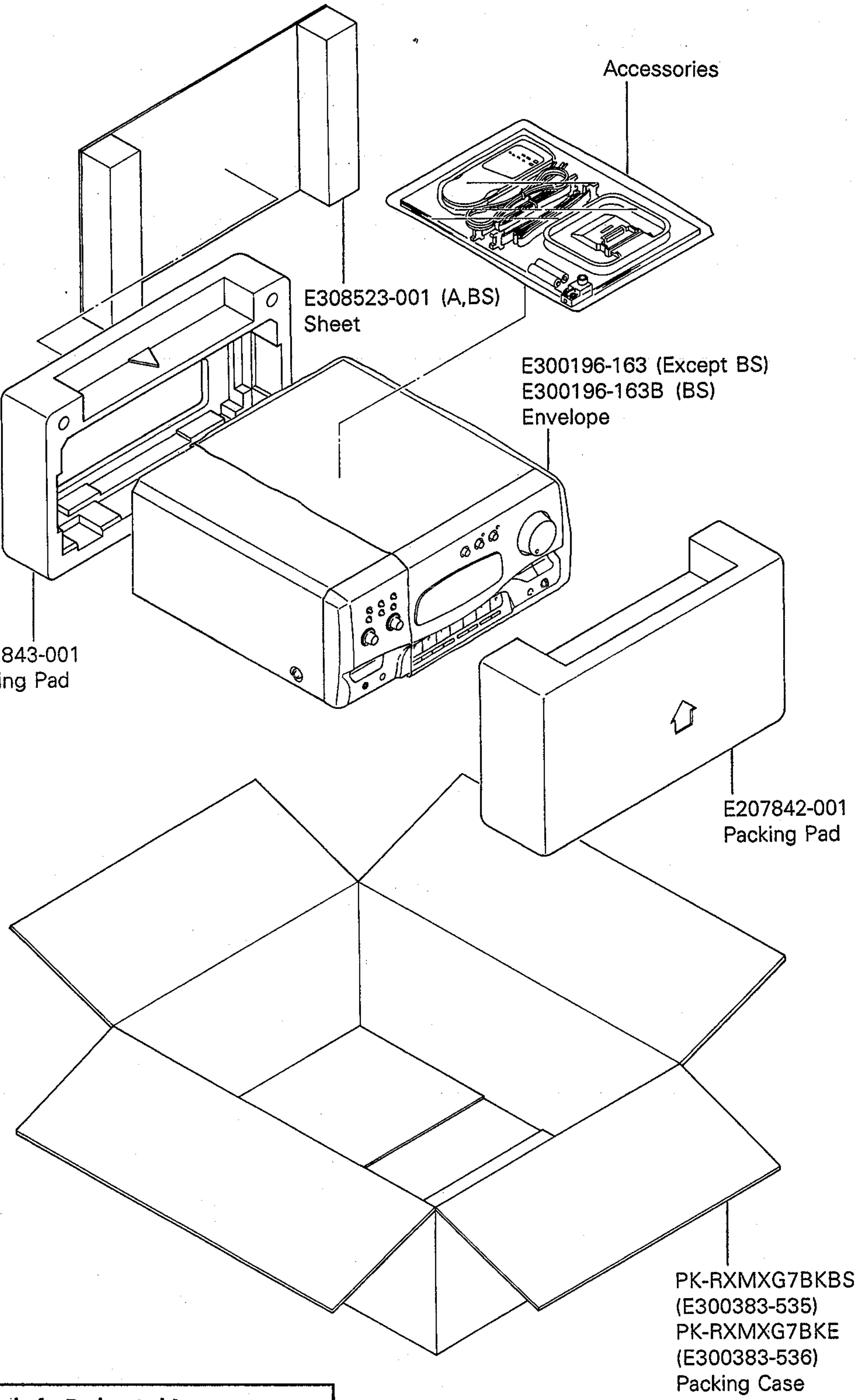
■ XT-MXG7BK (A , EN , EF , BS , G , GI)


E102711-001
Packing Pad
XL-MXG7BK
E300196-166 (Except BS)
E300196-166B (BS)
Envelope
TD-MXG7BK
E300196-164 (Except BS)
E300196-164B (BS)
Envelope
SE-MXG7BK
E300196-165 (Except BS)
E300196-165B (BS)
Envelope
E102712-001
Packing Pad
PK-XTMXG7BKE
(E300383-547)
Packing Case

The Marks for Designated Areas

A	Australia	EN	Scandinavia
EF	Continental Europe	BS	the U.K.
G	Germany	GI	Italy

No mark indicates all areas.


Accessories
E308523-001 (A,BS)
Sheet
E300196-163 (Except BS)
E300196-163B (BS)
Envelope
E207843-001
Packing Pad
E207842-001
Packing Pad
PK-RXMXG7BKBS
(E300383-535)
PK-RXMXG7BKE
(E300383-536)
Packing Case

The Marks for Designated Areas			
A	Australia	EN	Scandinavia
EF	Continental Europe	BS	the U.K.
G	Germany	GI	Italy
No mark indicates all areas.			

JVC-00806

XL-MXG7BK

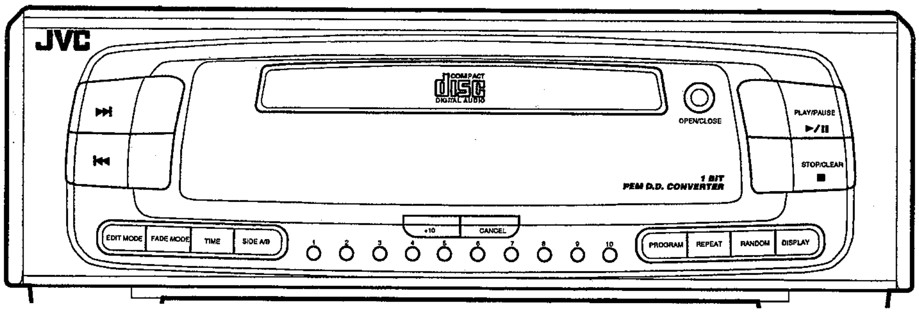
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

CA-MXG7BK/XT-MXG7BK

(Unit No. XL-MXG7BK)


JVC
COMPACT disc DIGITAL AUDIO
OPEN/CLOSE
PLAY/PAUSE
►/II
STOP/CLEAR
■
1 BIT
PEM D.D. CONVERTER
EDIT MODE
FADE MODE
TIME
SIDE A/B
+10
CANCEL
1
2
3
4
5
6
7
8
9
10
PROGRAM
REPEAT
RANDOM
DISPLAY

COMPU LINK
//// Remote ////
Control Component

** For instruction manual, packing materials and accessories, please refer to the RX-MXG7BK (S.M.No.20393).*
** RX-MXG7BK is needed (for power supply etc.) when servicing.*

Contents

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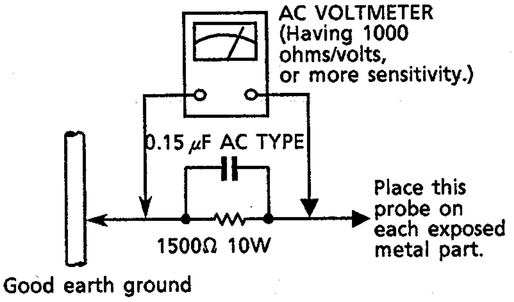
Printed Circuit Boards .... Insertion
Parts List .... Insertion

No.20396
Feb. 1993

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 µF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. CAUTION : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. CAUTION : If safety switches malfunction, the laser is able to function.
6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
7. CAUTION : The compact disc player provides a laser diode of wavelength 780-790nm and optical output power typical 3mW at the laser diode.

VARNING : Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL

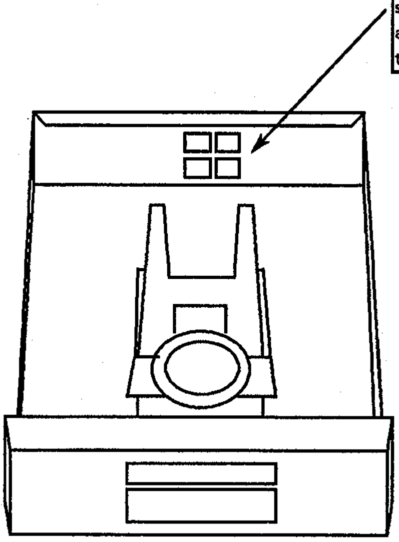
(Except for the U. S. A.)

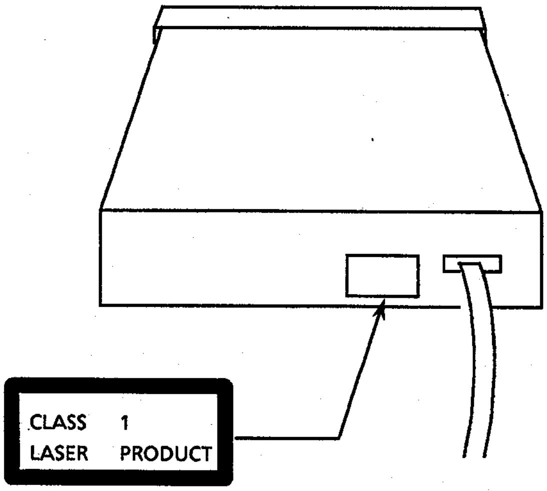
DANGER: Invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)

VARNING: Osynling laserstrålning när denna del å öppnad och spärren är urkoppled. Betrakta ej stålen. (s)

ADVARSEL: Usynling laserstråling ved åbning, når sikkerhedsafbrydere er ude at funktion. Undgåudsættelse for stråling. (d)

VARO: Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (f)





CLASS 1
LASER PRODUCT

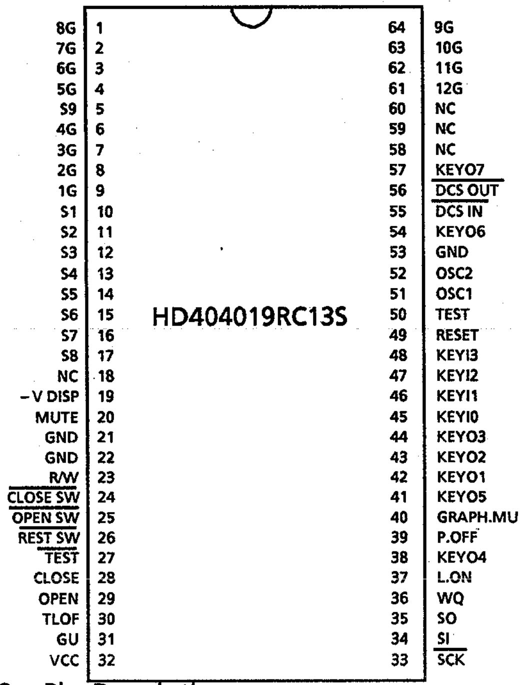
CLASSIFICATION LABEL

(Except for the U. S. A. and Canada)

Description of Major LSIs

■ HD404019RC13S (IC991) : Micro-computer

1. Terminal Layout


HD404019RC13S
8G 1
7G 2
6G 3
5G 4
S9 5
4G 6
3G 7
2G 8
1G 9
S1 10
S2 11
S3 12
S4 13
S5 14
S6 15
S7 16
S8 17
NC 18
-V DISP 19
MUTE 20
GND 21
GND 22
R/W 23
CLOSE SW 24
OPEN SW 25
REST SW 26
TEST 27
CLOSE 28
OPEN 29
TLOF 30
GU 31
VCC 32
33 SCK
34 SI
35 SO
36 WQ
37 L.ON
38 KEYO4
39 P.OFF
40 GRAPH.MU
41 KEYO5
42 KEYO1
43 KEYO2
44 KEYO3
45 KEYI0
46 KEYI1
47 KEYI2
48 KEYI3
49 RESET
50 TEST
51 OSC1
52 OSC2
53 GND
54 KEYO6
55 DCS IN
56 DCS OUT
57 KEYO7
58 NC
59 NC
60 NC
61 12G
62 11G
63 10G
64 9G

2. Key matrix

	KEY IN 0	KEY IN 1	KEY IN2	KEY IN3
KEY OUT 1	①	③	⑦	⑨
KEY OUT 2	④	②	⑤	
KEY OUT 3	⑩	⑥	⑧	PROGRAM
KEY OUT 4		⏮	EDIT MODE	⏭
KEY OUT 5	SIDE A/B	TIME	FADE MODE	
KEY OUT 6	REPEAT ALL / 1	RANDOM	DISPLAY	+10
KEY OUT 7	PLAY / PAUSE	OPEN / CLOSE	CANCEL	STOP / CLEAR

3. Pin Description

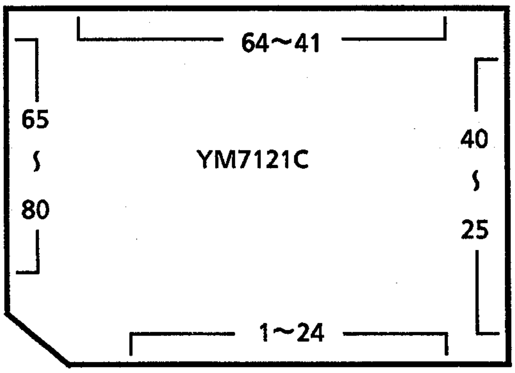
Pin No.	Symbol	I/O	Functions and Operations	Pin NO.	Symbol	I/O	Functions and Operations
1~4	8G~5G	O	FL grid control output	35	(D IN) SO	O	Serial data output for IC841
5	S9	O	FL segment control output	36	WQ	I	Write request signal input
6~9	4G~1G	O	FL grid control output	37	L.ON	O	Laser on signal output
10~17	S1~S8	O	FL segment control output	38	KEYO4	O	Key matrix output
18	NC	--	Non connection	39	P.OFF	O	Power off signal output
19	-VDISP	I	FL Power supply	40	GRAPH.MU	O	Graphic mute signal output
20	MUTE	O	Mute signal output	41	KEYO5	O	Key matrix output
21	GND	--	Ground	42~44	KEY OUT1 ~ KEY OUT3	O	Key matrix output
22	GND	I	Ground	45~48	KEY IN0 ~ KEY IN3	I	Key matrix input
23	R/W	O	Read / Write signal output	49	RESET	I	Reset signal input
24	CLOSE SW	I	Close switch : active low	50	TEST	I	Test mode input : connected to +5V
25	OPEN SW	I	Open switch : active low	51	OSC 1	I	Clock Oscillation input
26	RESET SW	I	Reset switch : active low at the inmost position of pickup	52	OSC 2	O	Clock Oscillation output
27	TEST	I	Test mode input	53	GND	--	Ground
28	CLOSE	O	Close signal output	54	KEYO6	O	Key matrix output
29	OPEN	O	Open signal output	55	DCS IN	I	Compu-link signal input
30	TLOF	O	Tracking servo off signal output	56	DCS OUT	O	Compu-link signal output
31	GU	O	Tracking gain up signal output	57	KEYO7	O	Key matrix output
32	VCC	--	+ 5V	58~60	NC	--	Non connection
33	SCK	O	Clock output for IC841	61	12G	O	FL grid control output
34	(D OUT) SI	I	Serial data input from IC841	62~64	11G~9G	O	FL grid control output

■YM7121C(IC401)

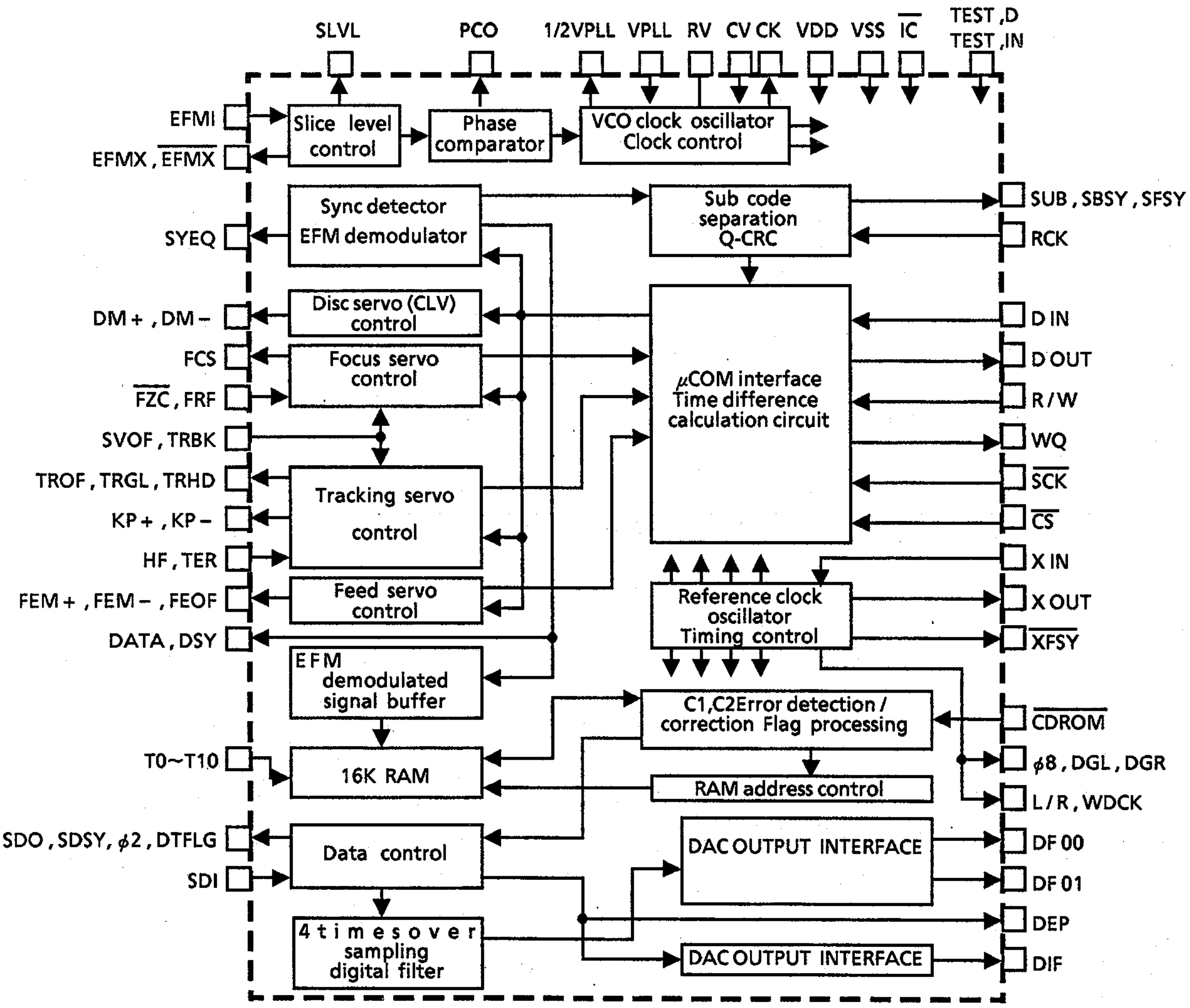
1. Outline

YM7121 is a C-MOS LSI for signal processing and servo control (SVC) in a CD player. It is used for the demodulation of the EFM signal from the laser pick up , detection / correction of the error signal , signal processing in digital filtering , etc. and for various servo controls (focusing , disc , tracking and feed servos).
And it contains digital interface which output the audio digital signals in S-RAM and CD-player. This digital interface matches EIAJ standards.

2. Top View


64~41
65 ∫ 80
YM7121C
40 ∫ 25
1~24

3. Inner Block Diagram


SLVL
PCO
1/2VPLL
VPLL
RV
CV
CK
VDD
VSS
IC
TEST ,E
TEST ,D
TEST ,IN
EFMI
EFMX , EFMX
SYEQ
DM + , DM –
FCS
FZC , FRF
SVOF , TRBK
TROF , TRGL , TRHD
KP + , KP –
HF , TER
FEM + , FEM – , FEOF
DATA , DSY
T0~T10
SDO , SDSY, ϕ2 , DTFLG
SDI
Slice level control
Phase comparator
VCO clock oscillator Clock control
Sync detector EFM demodulator
Sub code separation Q-CRC
Disc servo (CLV) control
Focus servo control
μCOM interface Time difference calculation circuit
Tracking servo control
Feed servo control
Reference clock oscillator Timing control
EFM demodulated signal buffer
C1,C2Error detection / correction Flag processing
16K RAM
RAM address control
Data control
DAC OUTPUT INTERFACE
4 times over sampling digital filter
DAC OUTPUT INTERFACE
SUB , SBSY , SFSY
RCK
D IN
D OUT
R / W
WQ
SCK
CS
X IN
X OUT
XFSY
CDROM
ϕ8 , DGL , DGR
L / R , WDCK
DF 00
DF 01
DEP
DIF

4. Terminal Function

Pin No.	Symbol	I/O	Function and Operation
1	CV	I	Adequate time constant is added to this terminal and input the PCO output. This makes the structure of clock reproduce circuit by inner VCO circuit.
2	RV	–	RV terminal is standard voltage terminal of inner VCO. And capacity for stabilizing is added to this terminal.
3 32 72	VDD	–	These are +5V power supply terminals.
4 5 70	TEST. IN TEST. E TEST. D	I I I	These terminals are for test.
6	SYEQ	O	This is the check output terminal, it becomes high when flame synchronizing signal detected from EFM pattern coincides frame synchronizing signal from internal counter.
7 8	DSY DATA	O O	Not used.
9	CK	O	CK has 4.3218 MHz clock.
10~19	T0~T9	I	This terminal is internal RAM test terminal, and connected GND.
22	DEP	O	De-emphasis is necessary when this terminal is high.
23	DIF	O	DIF is digital audio interface format output matched EIAJ standards.
24	SDO	O	SDO is a serial signal output of $\phi 2$ bit rate. (The MSB puts in at first.)
25	SDI	I	SDI is the input terminal of 4 times over sampling digital filter. It is usually connected with SDO.
26	SDSY	O	This terminal changes the Lch / Rch by LSB of the SDO.
27	DTFLG	O	Not used.
28	$\phi 2$	O	$\phi 2$ is 2.1168 MHz crystal clock.
29, 52, 77,66	VSS	–	GND
30	XOUT	O	Not used.
31	XIN	I	Input from crystal clock.
33	$\overline{\text{XFSY}}$	O	Not used.
34 35 36 37	SUB SBSY RCK SFSY	O O I O	After detecting that SBSY changes from low to high by IC991, the sub-code(P~W) can be output from SUB output terminal by inputting 8 clocks to RCK terminal at every point where SFSY changes low to high.
38	$\overline{\text{CDROM}}$	O	Not used.
39	$\phi 8$	O	$\phi 8$ is 8.4672MHz crystal clock.
40	WDCK	O	Not used.
41	L/R	O	This is synchronizing signal for data transfer and it connects with DAC.
42 43	DGL DGR	O O	Not used.
44 45	DF01 DF00	O O	Serial data output.(Right channel). Serial data output.(Left channel).
46	$\overline{\text{SCK}}$	I	This terminal is connected to μCOM. It is an input terminal that carries the clock signal for data transfers.
47	R/W	I	This connects with microcomputer and it is an output terminal for switching data transmission mode. it enables to transmit data from SVC to microcomputer when R/M is "L" and from microcomputer to SVC when R/W is "H".
48	$\overline{\text{CS}}$	I	This is a chip select terminal for YM7121.
49	DOUT	O	This terminal is the data output terminal connected to μCOM. When R/W is low, data is transferred from YM7121 to μCOM, according to the SCK clock input.

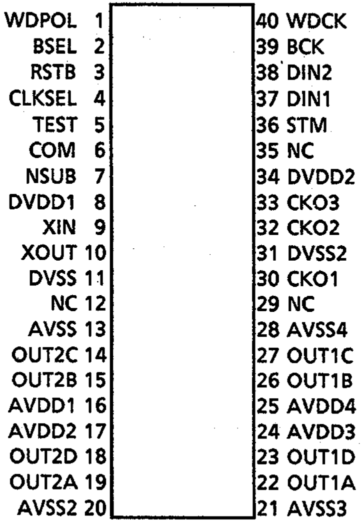
Pin No.	Symbol	I/O	Function and Operation
50	WQ	O	This terminal is connected to μCOM. It is a request signal which demands to μCOM inputting the data transfer (YM7121 to μCOM).
51	DIN	I	This is a data input terminal connected to μCOM. When R/W is high, the data is transferred from μCOM to YM7121 according to the SCK clock input.
53 54	DM + DM –	O O	These terminals output the PWM to control the speed of spindle motor. The speed of the motor goes up when DM + is high, and slows down when DM – is high: both terminals can not become high simultaneously.
55 56 60 61 62 63 64	HF TER TRHD TRGL TROF KP – KP +	I I O O O O O	When tracks are being crossed during serches, the amplitude variation of the generated HF signal is sampled at the zero – cross point of the tracking error signal TER and the TROF signal is output. The level variations of this signal turn the servo on and off, greatly facilitaing track acquisition. KP + or KP – is output to conduct tracking, and TRHD is output during tracking to cause generation of the tracking error signal. The TRGL signal is for increasing the tracking gain after tracking is completed.
57 58 59	FEM + FEM – FEOF	O O O	The FEM + and FEM – are output as high speed feed signals, and FEOF signal is output for cutting the feed servo during high speed feed.
65	TRBK	I	TRBK is input to apply tracking brake from outside. TRGL becomes low with high input and inner control signal TBKE becomes high.
67 58 59	$\overline{\text{FZC}}$ FCS FRF	I O I	These terminals are used for controlling the focus servo. The FCS is for a leading signal of Focusing ; the signal, generated when the focus point is achieved, terminate the focusing operation ; and FCO flag is dropped internally by FRF signal generated when reflected light is detected.
71	$\overline{\text{IC}}$	I	YM7121 needs initializing when power supply turn on. IC will be low more than 400μs since XIN is input clock with VDD standard.
73 74 75	SLVL $\underline{\text{EFMX}}$ EFMX	O O O	Amplitude limited, mutually anti-phased signals are output from EFMX and $\overline{\text{EFMX}}$. Slice level is controlled by these signals and external amplifier. SLVL is output amplitude alteration component of both terminals. When integral circuit is connected to external. YM7121 easily can control slice level.
76	EFMI	I	This terminal is input EFM signal. (1～2 Vpp)
78	PCO	O	This terminal outputs the phase difference when the polarity of the clock and the EFM pattern changes.
79	VPLL	I	This terminal is input D.C. voltage matched VCO free run frequency. (17.2872 MHz)
80	1/2 VPLL	O	This terminal outputs a half of VPLL input, and capacity for stabilizing is added to this terminal.

■JCE4501(IC873) : D / A CONVERTER

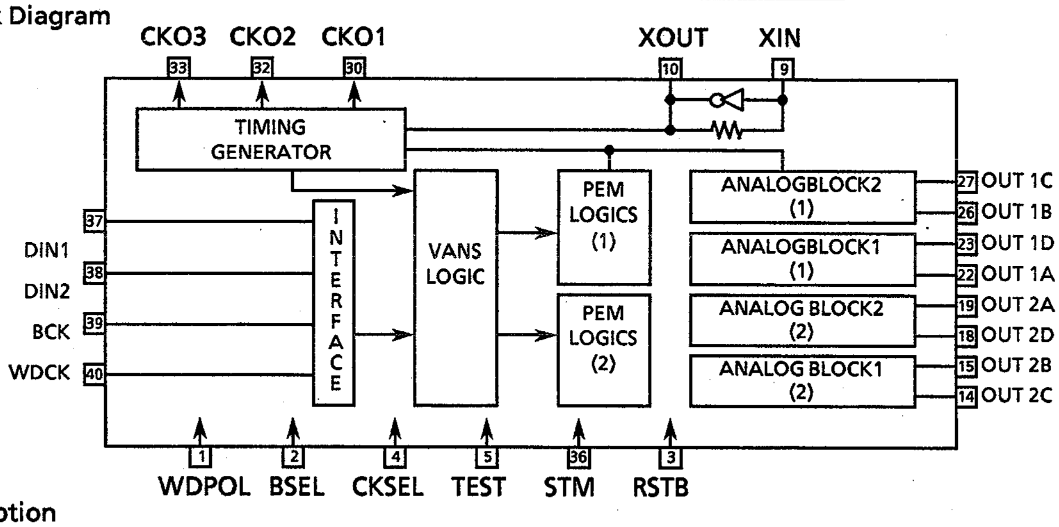
1. Outline

The JCE4501 is a CMOS digital-analog converter with independent left and right channels. It was developed for PCM digital audio equipment.I t features pulse edge modulation (PEM) and Victor advanced noise shaping (VANS) for resolution equipment to 20 bits(0-20kHz) and a low distortion ratio. At JVC, this type of digital-analog converter is called a DD converter.

2. Terminal Layout


WDPOL 1
BSEL 2
RSTB 3
CLKSEL 4
TEST 5
COM 6
NSUB 7
DVDD1 8
XIN 9
XOUT 10
DVSS 11
NC 12
AVSS 13
OUT2C 14
OUT2B 15
AVDD1 16
AVDD2 17
OUT2D 18
OUT2A 19
AVSS2 20
40 WDCK
39 BCK
38 DIN2
37 DIN1
36 STM
35 NC
34 DVDD2
33 CKO3
32 CKO2
31 DVSS2
30 CKO1
29 NC
28 AVSS4
27 OUT1C
26 OUT1B
25 AVDD4
24 AVDD3
23 OUT1D
22 OUT1A
21 AVSS3

3. Block Diagram

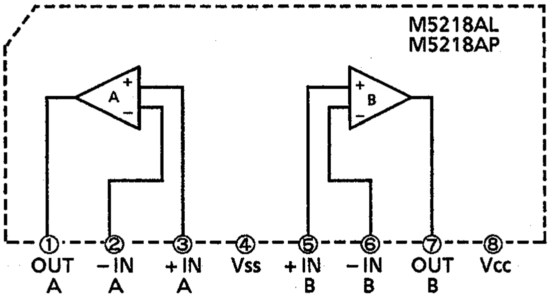

CKO3
CKO2
CKO1
XOUT
XIN
33
32
30
10
9
TIMING GENERATOR
37
DIN1
38
DIN2
39
BCK
40
WDCK
INTERFACE
VANS LOGIC
PEM LOGICS (1)
PEM LOGICS (2)
ANALOGBLOCK2 (1)
ANALOGBLOCK1 (1)
ANALOG BLOCK2 (2)
ANALOG BLOCK1 (2)
27 OUT 1C
26 OUT 1B
23 OUT 1D
22 OUT 1A
19 OUT 2A
18 OUT 2D
15 OUT 2B
14 OUT 2C
1
2
4
5
36
3
WDPOL
BSEL
CKSEL
TEST
STM
RSTB

4.Description

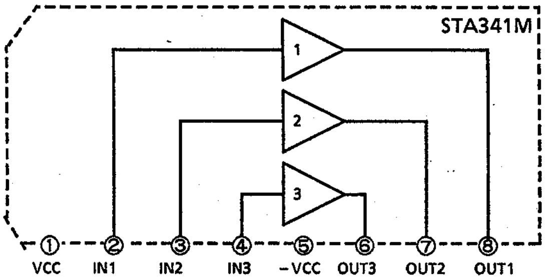
Pin No	Symbol	I/O	Description	Pin No	Symbol	I/O	Description
1	WDPOL	I	Word data polarity switching pin	21	AVSS3	--	Analog ground pin 3
2	BSEL	I	H:CDX2554P format,L: YM3414 format	22	OUT1A	O	Not used
3	RSTB	I	Reset pin (low active)	23	OUT1D	O	1D PEM output pin
4	CLKSEL	I	H: 256fs mode,L: 384fs mode	24	AVDD3	--	Analog power supply pin 3
5	TEST	I	Test mode switching pin	25	AVDD4	--	Analog power supply pin 4
6	COM	I	COM board voltage fastening pin	26	OUT1B	O	Not used
7	NSUB	I	Silicon board voltage fastening pin	27	OUT1C	O	1C PEM output pin
8	DVDD1	--	Digital power supply pin 1	28	AVSS4	--	Analog ground pin 4
9	XIN	I	Crystal oscillator input pin	29	NC	--	To ground
10	XOUT	O	Crystal oscillator output pin	30	CKO1	O	Clock output pin 1(384fs output)
11	DVSS1	--	Digital ground pin 1	31	DVSS2	--	Digital ground pin 2
12	NC	--	To ground	32	CKO2	O	Clock output pin 2(192fs output)
13	AVSS1	--	Analog ground pin 1	33	CKO3	O	Clock output pin 3(128fs output)
14	OUT2C	O	2C PEM output pin	34	DVDD2	--	Digital power supply pin 2
15	OUT2B	O	Not used	35	NC	--	Non connection
16	AVDD1	--	Analog power supply pin 1	36	STM	I	Stereo/Monaural switching pin H: stereo,L:left channel,reversed polarity left channel
17	AVDD2	--	A nalog power supply pin 2	37	DIN1	I	Left channel 18-bits 8Fs serial data input
18	OUT2D	O	2D PEM output pin	38	DIN2	I	Right channel 18-bits 8Fs serial data input
19	OUT2A	O	Not used	39	BCK	I	Bit clock input pin
20	AVSS2	--	Analog ground pin 2	40	WDCK	I	Word clock input pin

Internal Block Diagrams of Other ICs

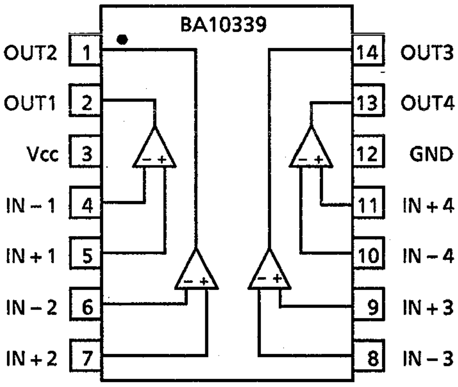
■ M5218AL (IC 762,781,803)
M5218AP (IC 871) : Dual OP Amp.


M5218AL
M5218AP
A
B
+
−
① OUT A
② −IN A
③ +IN A
④ Vss
⑤ +IN B
⑥ −IN B
⑦ OUT B
⑧ Vcc

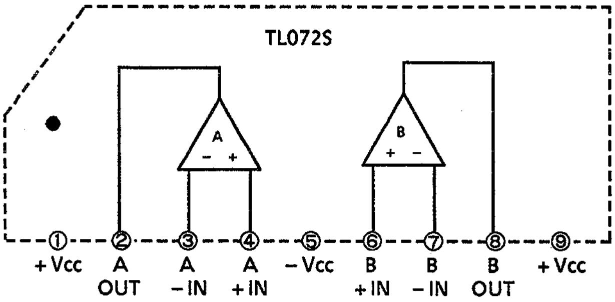
■ STA341M (IC761) : Motor Driver


STA341M
1
2
3
① VCC
② IN1
③ IN2
④ IN3
⑤ −VCC
⑥ OUT3
⑦ OUT2
⑧ OUT1

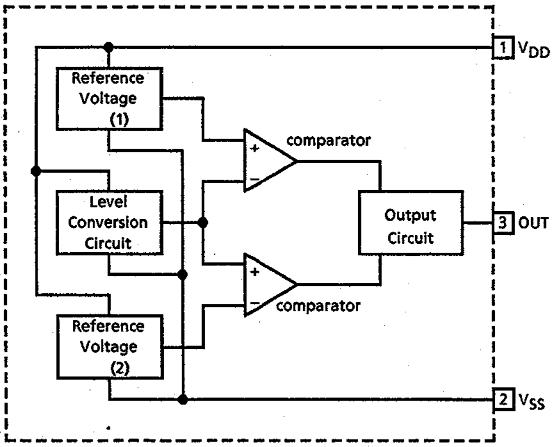
■ XRA10339 (IC802) : Comparator


BA10339
OUT2 1
OUT1 2
Vcc 3
IN−1 4
IN+1 5
IN−2 6
IN+2 7
14 OUT3
13 OUT4
12 GND
11 IN+4
10 IN−4
9 IN+3
8 IN−3
− +

■ TL072S (IC801) : Dual OP Amp.


TL072S
A
B
− +
+ −
① +Vcc
② A OUT
③ A −IN
④ A +IN
⑤ −Vcc
⑥ B +IN
⑦ B −IN
⑧ B OUT
⑨ +Vcc

■ MN1280 (P.Q). : IC992 RESET IC

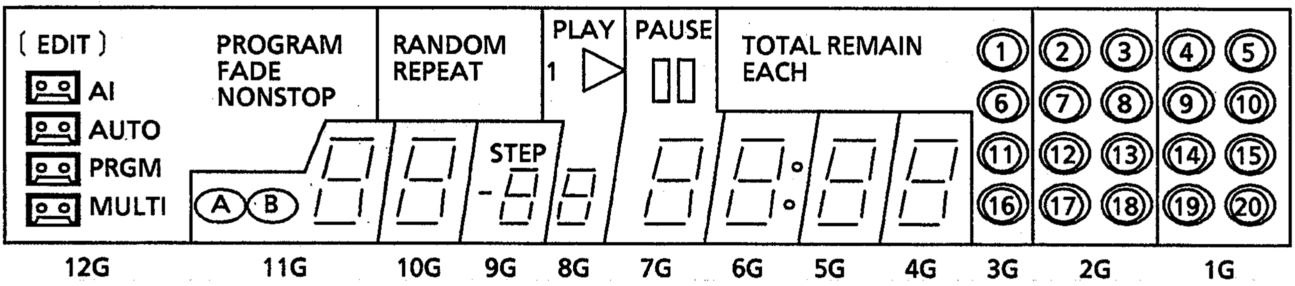

Reference Voltage (1)
Level Conversion Circuit
Reference Voltage (2)
comparator
comparator
+
−
Output Circuit
1 VDD
3 OUT
2 VSS

Pin No.	Pin Name	Functions
1	V_{DD}	Power supply
2	V_{SS}	Ground
3	OUT	Reset signal output : Low level is output when resetting : High level is output when cancelling the reset.

Internal Connections for the FL Display Tube

■ ELU0001-140:(FL991)

1. Grid Layout


(EDIT)
AI
AUTO
PRGM
MULTI
PROGRAM
FADE
NONSTOP
A
B
RANDOM
REPEAT
STEP
PLAY
1
PAUSE
TOTAL REMAIN
EACH
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
12G
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G

2. Pin Connections

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ELECTRODE	F1	F1	NP	NP	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	P8	P7	P6	P5	P4	P3

TERMINAL NO.	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
ELECTORODE	P2	P1	NP	1G	2G	3G	4G	P9	5G	6G	7G	8G	9G	10G	11G	12G	NP	NP	1G	NP	NP	F2	F2

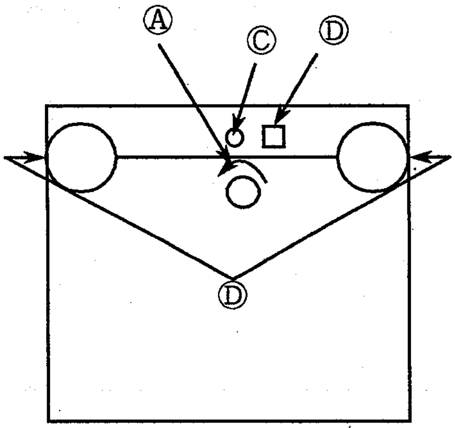
(Note) F: Filament G: Grid NP: NoPin NC: No Connection P1~P9: Anode

3. Anode Connection Table

	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	AI&MARK	a	a	a	a	a	a	a	a	(1)	(2)	(4)
S2	AUTO&MARK	b	b	b	b	b	b	b	b	(6)	(7)	(9)
S3	PRGM&MARK	c	c	c	c	c	c	c	c	(11)	(12)	(14)
S4	MULTI&MARK	d	d	d	d	d	d	d	d	(16)	(17)	(19)
S5	FADE	e	e	e	e	e	e	e	e	TOTAL	(3)	(5)
S6	NONSTOP	f	f	f	f	f	f	f	f	EACH	(8)	(10)
S7	(EDIT)	g	g	g	g	g	g	g	g	REMAIN	(13)	(15)
S8	PROGRAM	(A)	RANDOM	STEP	REPEAT (1)	----	----	----	----	----	(18)	(20)
S9	----	(B)	REPEAT	(−)	PLAY >	PAUSE	DP(:)	----	----	----	----	----

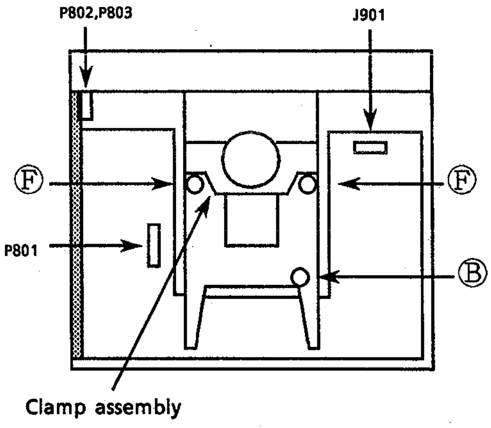
Disassembly Procedures

1. Removing the top cover
(1) Remove the 2 screws on both sides of the top cover and the 4 screws on the rear side .
(2) Gently spread both sides of the top cover to the outside, lift up the rear section, and remove the top cover.



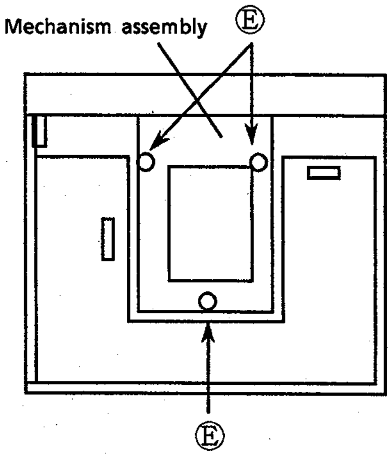
2. Removing the tray
(1) Remove the top cover.
(2) Switch on the power of RX-MXG7BK .
Press the OPEN / CLOSE switch to bring the tray forward and with the tray forward, switch off the power.
(3) Remove the screw on the tray Ⓑ.
(4) Pull the tray toward the front to move it.

Note
If the power does not come on due to breakdown or the, insert a Philips screwdriver through the hole at the bottom of the front panel and turn it counter-clockwise to bring the tray forward Ⓐ.



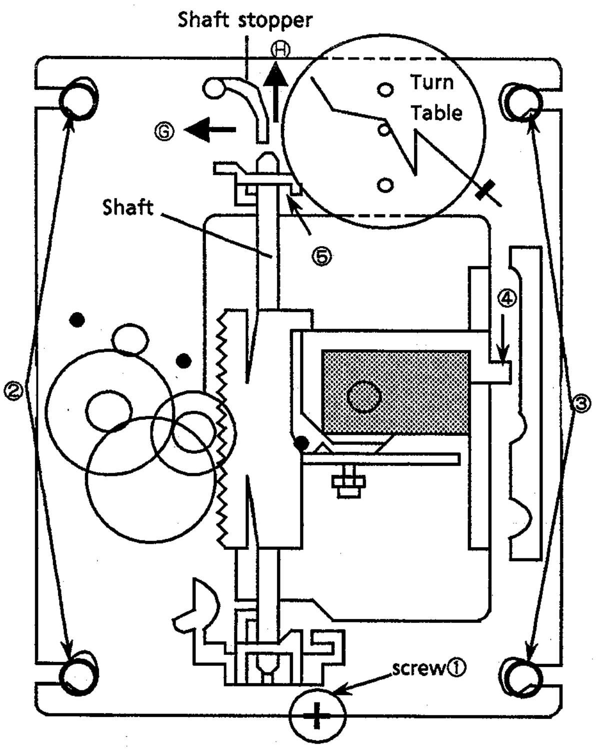
3. Removing the front panel assembly
(1) Remove the top cover.
(2) Remove the connectors (P901) connecting with main P.C. Boards.
(3) Remove the screw Ⓒ
(4) Remove the 3 hooks Ⓓ to remove the front panel.

4. Removing the mechanism assembly
(1) Remove the top cover .
(2) Remove the tray .
(3) Remove the connectors (P801, P802,P803) .
(4) Remove the 2 screws Ⓕ holding the clamp assembly, then remove it.
(5) Remove the 3 screws Ⓔ holding the mechanism assembly.

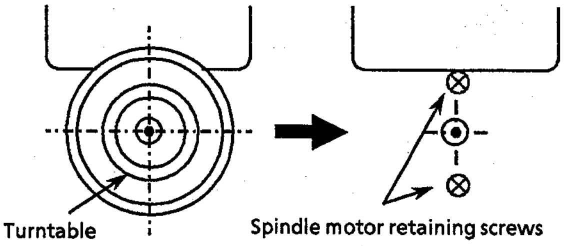


7. Removing the Laser Pickup
1) Remove the metal cover, tray assembly and the clamp.
2) Remove the screw ① from the Mecha Base assembly.
3) Remove the Mecha Base assembly from the rubber cushion ②③.
4) Move the Shaft stopper from the rest position to the left side Ⓖ.
5) Remove the Pickup Shaft from the Mecha Base assembly.(Slide the Pickup shaft to the up sideⒽ)
6) Remove the CD Pick Unit with the shaft.

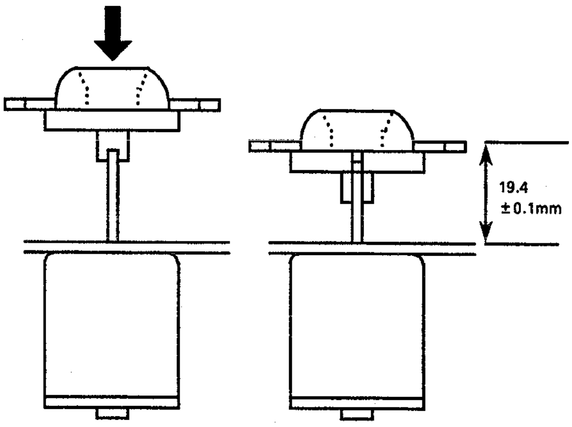
8. Installing the Laser Pickup
(See page1-15(Before installing the pickup))
1) Connect the Flat wire with the connectors of APC (Automatic Power Control) P.C.Board.
2) While installing the ④ in the CD Support, set the shaft on the base hook⑤.
3) Install the Mecha Base assembly to the rubber cushion ②③.



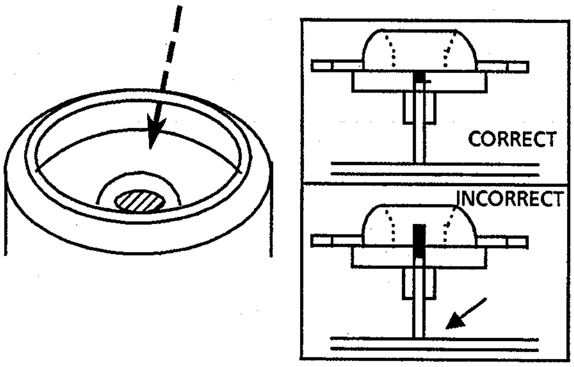
9. Removing the spindle motor
1) Remove the Mechanism assembly.
2) Remove the turntable, and remove the two screws retaining the spindle motor.
3) Remove the screw retaining the spindle and the Feed Motor P.C. Board and unsolder it.



10. Installing the spindle motor
1) Tighten the 2 screws to the same torque.
2) Fasten the Spindle and the Feed Motor P.C. Board with the screw and solder.
3) Install the turntable.When installing, press straight down at the center of the turntable until the distance from the surface of the mechanism base to the top of the turntable is exactly 19.4 ± 0.1mm.

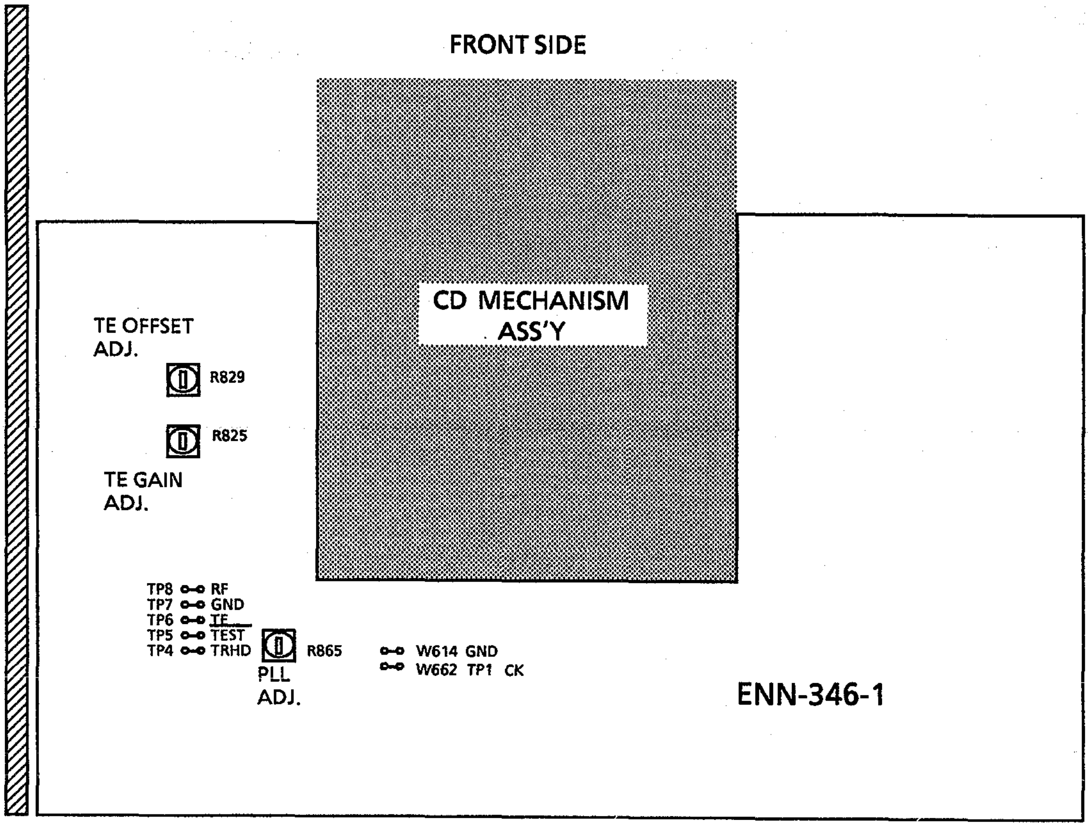


4) After insertion is complete, bond the motor shaft and turntable together (at the section marked by an arrow in the figure on the left below).



5) Use "LOCKTITE" #460 bonding agent, and apply as little as possible. Take care not to allow any excess bonding agent to get onto the turntable. Be extremely careful not to allow bonding agent to adhere to the motor bearings (the section marked by an allow in the figure on the right).

Adjustment Procedures


FRONT SIDE
CD MECHANISM ASS'Y
TE OFFSET ADJ.
R829
R825
TE GAIN ADJ.
TP8 RF
TP7 GND
TP6 TE
TP5 TEST
TP4 TRHD
R865
PLL ADJ.
W614 GND
W662 TP1 CK
ENN-346-1

*** Use RX-MXG7BK when adjusting.**

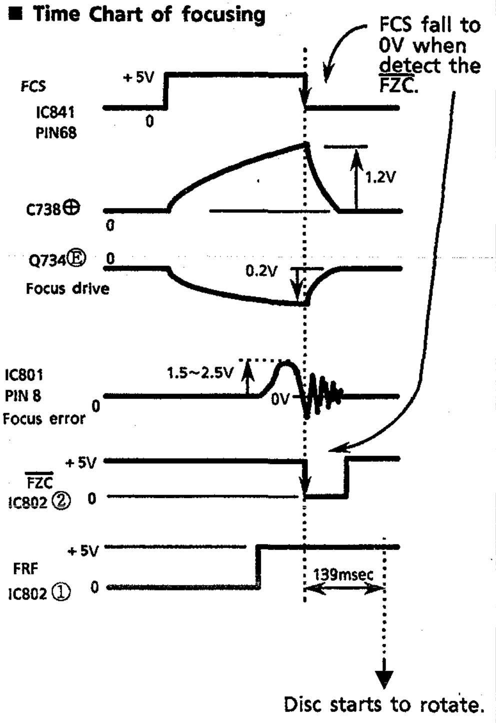
1. PLL free-running adjustment
   1) Measuring instrument
      Frequency counter
   2) Adjusting procedure
      (1) Connect a frequency counter with TP1 (CK:W662) and W614 (GND) on the main PC board.
      (2) Adjust R865 for setting the frequency counter's value becomes 4.295 ± 0.005MHz.

2. Tracking gain adjustment
   1) Measuring instruments
      Oscilloscope, Normal disc
   2) Adjusting procedure
      (1) Connect an oscilloscope with TP6 (TE) and TP7 (GND) on the main PC board.
      (2) Play a disc.
      (3) Short circuit TP5 (TEST) to TP7 (GND).
      (4) Adjust R825 for setting tracking error signal becomes 2.0 $V_{P\text{-}P}$.

3. Tracking offset adjustment
   1) Measuring instruments
      Oscilloscope, Normal disc
   2) Adjusting procedure
      (1) Connect an oscilloscope with TP6 (TE) and TP7 (GND) on the main PC board.
      (2) Play a disc.
      (3) Short circuit TP5 (TEST) to TP7 (GND).
      (4) Adjust R829 for setting the DC level of the tracking error (off set) becomes 0.

Flow of Functional Operation Until TOC is Read

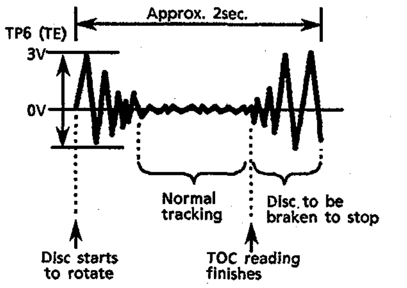
■ Time Chart of focusing


FCS fall to 0V when detect the FZC.
FCS
IC841
PIN68
+5V
0
1.2V
C738⊕
0
Q734Ⓔ
0
0.2V
Focus drive
IC801
PIN 8
Focus error
0
1.5~2.5V
0V
+5V
FZC
IC802 ②
0
+5V
FRF
IC802 ①
0
139msec
Disc starts to rotate.

- When the lens moves up and down in a 2-seconds interval, FZC is not output.
- When the lens moves up and down in less than 1-second, FRF is not output or the focus servo loop is abnormal.

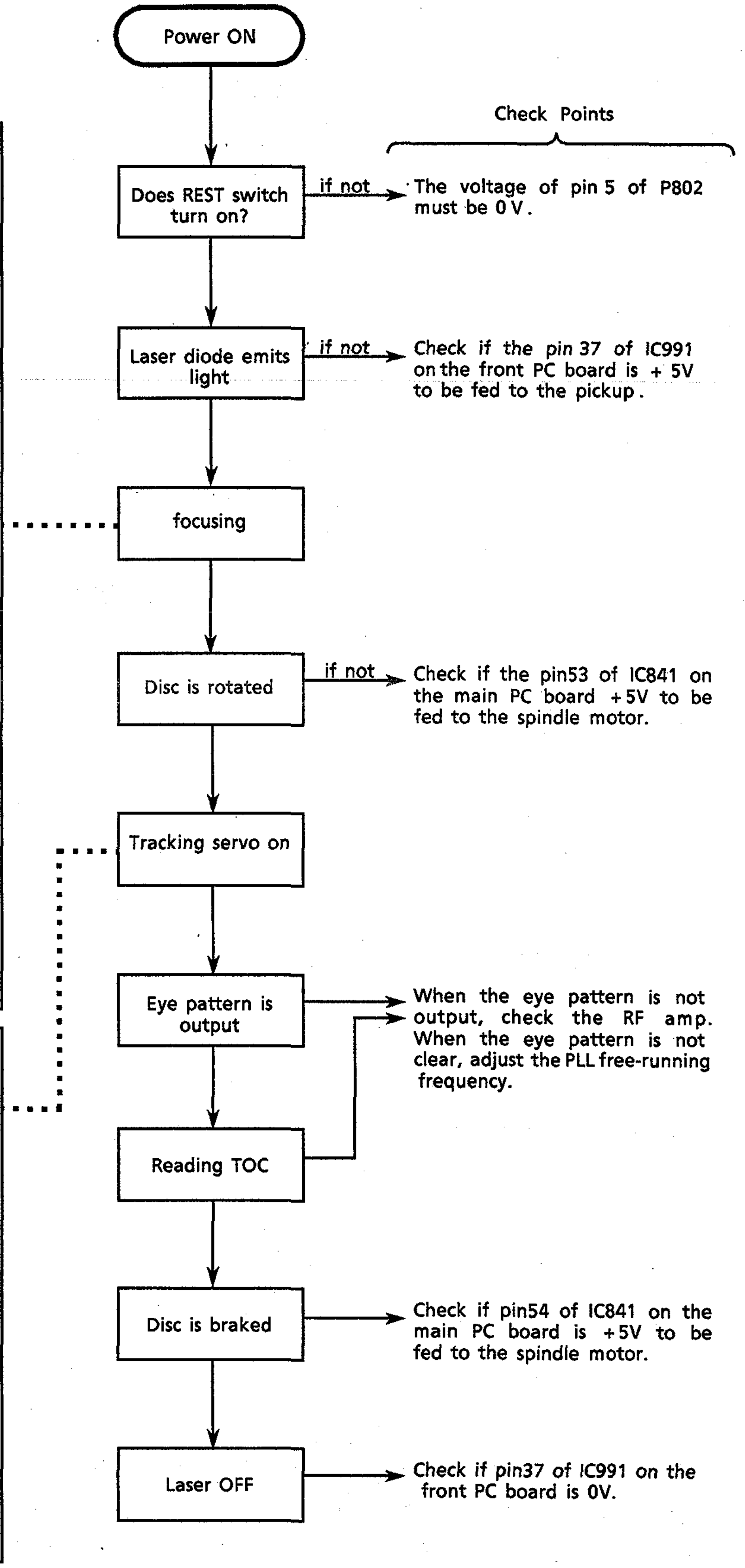
Fig-1

■ Tracking error waveform at TOC reading


Approx. 2sec.
TP6 (TE)
3V
0V
Normal tracking
Disc to be braken to stop
Disc starts to rotate
TOC reading finishes

■ When the tracking loop does not turn ON, check the tracking offset and align it to 0.

Fig-2


Power ON
Does REST switch turn on?
if not
Laser diode emits light
if not
focusing
Disc is rotated
if not
Tracking servo on
Eye pattern is output
Reading TOC
Disc is braked
Laser OFF
Check Points

Check Points

The voltage of pin 5 of P802 must be 0 V.

Check if the pin 37 of IC991 on the front PC board is + 5V to be fed to the pickup.

Check if the pin53 of IC841 on the main PC board +5V to be fed to the spindle motor.

When the eye pattern is not output, check the RF amp. When the eye pattern is not clear, adjust the PLL free-running frequency.

Check if pin54 of IC841 on the main PC board is +5V to be fed to the spindle motor.

Check if pin37 of IC991 on the front PC board is 0V.

Maintenance of Laser Pickup

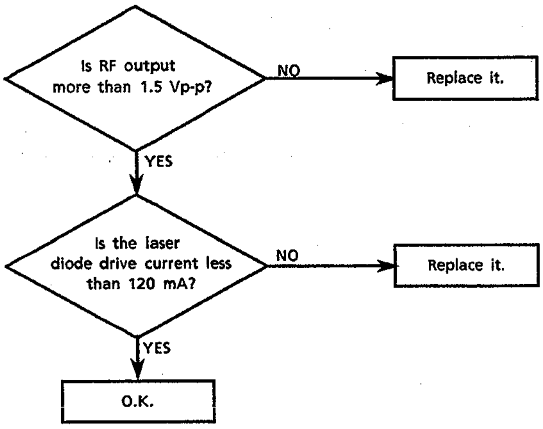
1. Life of the laser diode

When the life of the laser diode has expired, the following symptoms will appear.

(1) The level of RF output (EFM output: amplitude of eye pattern) will be low.

(2) The drive current required by the laser diode will be increased.

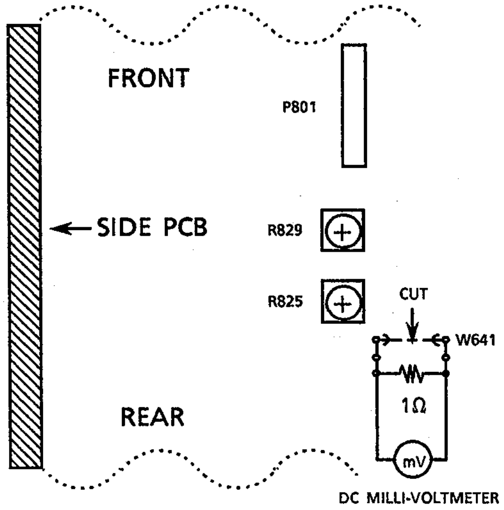
In such a case, check the life of the laser diode following the flowchart below


Is RF output more than 1.5 Vp-p?
NO
Replace it.
YES
Is the laser diode drive current less than 120 mA?
NO
Replace it.
YES
O.K.

2. Measurement of laser diode drive current

Replace the jump wire (W641) shown below with the resistor (1Ω).

Measure the voltage across the resistor with a milli-voltmeter. When the voltage is more than 120mV, it shows that the life of the laser diode has expired



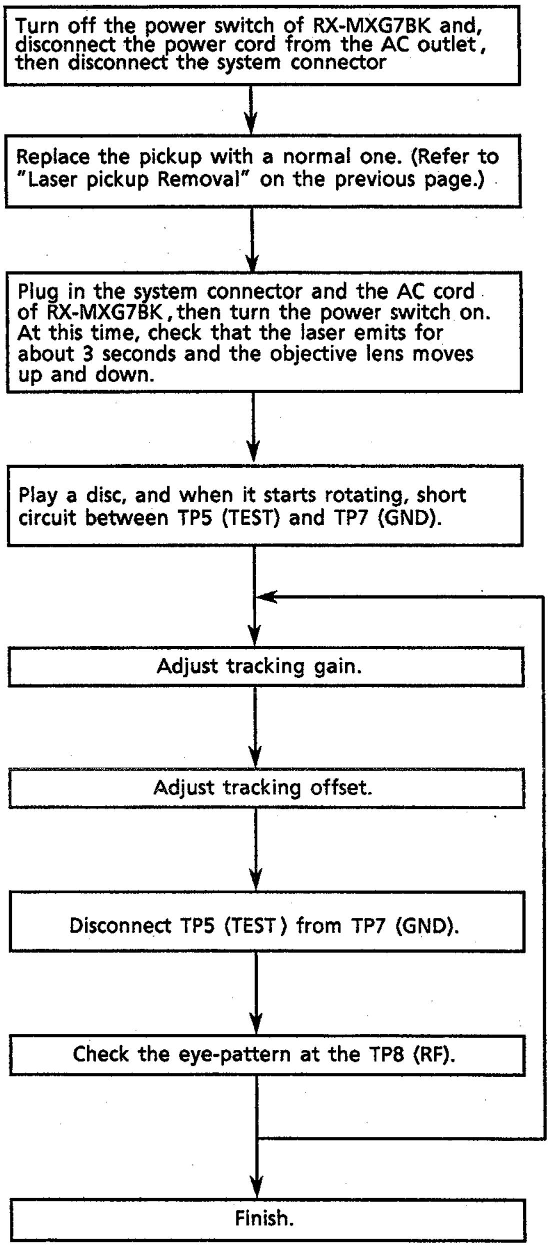
3. Semi-fixed resistor on the APC PC board

The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power. Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.

If the laser power is lower than the specified value, the laser diode is almost worn out, and the laser pickup should be replaced.

If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

Replacement of Laser Pickup



Turn off the power switch of RX-MXG7BK and, disconnect the power cord from the AC outlet, then disconnect the system connector

Replace the pickup with a normal one. (Refer to "Laser pickup Removal" on the previous page.)

Plug in the system connector and the AC cord of RX-MXG7BK, then turn the power switch on. At this time, check that the laser emits for about 3 seconds and the objective lens moves up and down.

Play a disc, and when it starts rotating, short circuit between TP5 (TEST) and TP7 (GND).

Adjust tracking gain.

Adjust tracking offset.

Disconnect TP5 (TEST) from TP7 (GND).

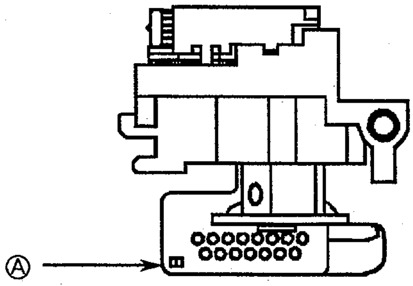
Check the eye-pattern at the TP8 (RF).

Finish.

Note : Since one adjustment may affect other settings, repeat these adjustments a few times.

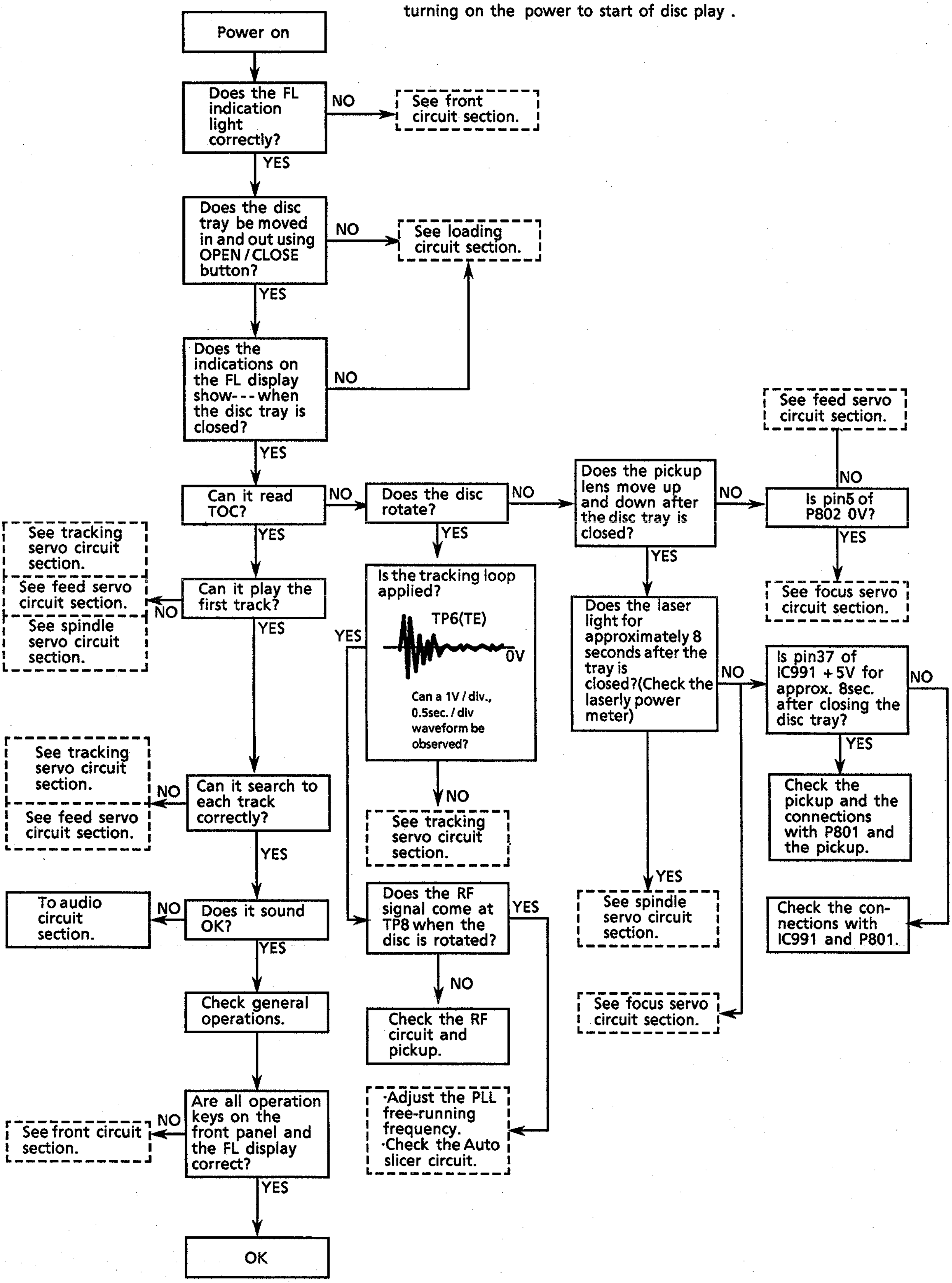
Before installing the pickup

Unsolder the part Ⓐ, which is used for countermeasure for static electricity.

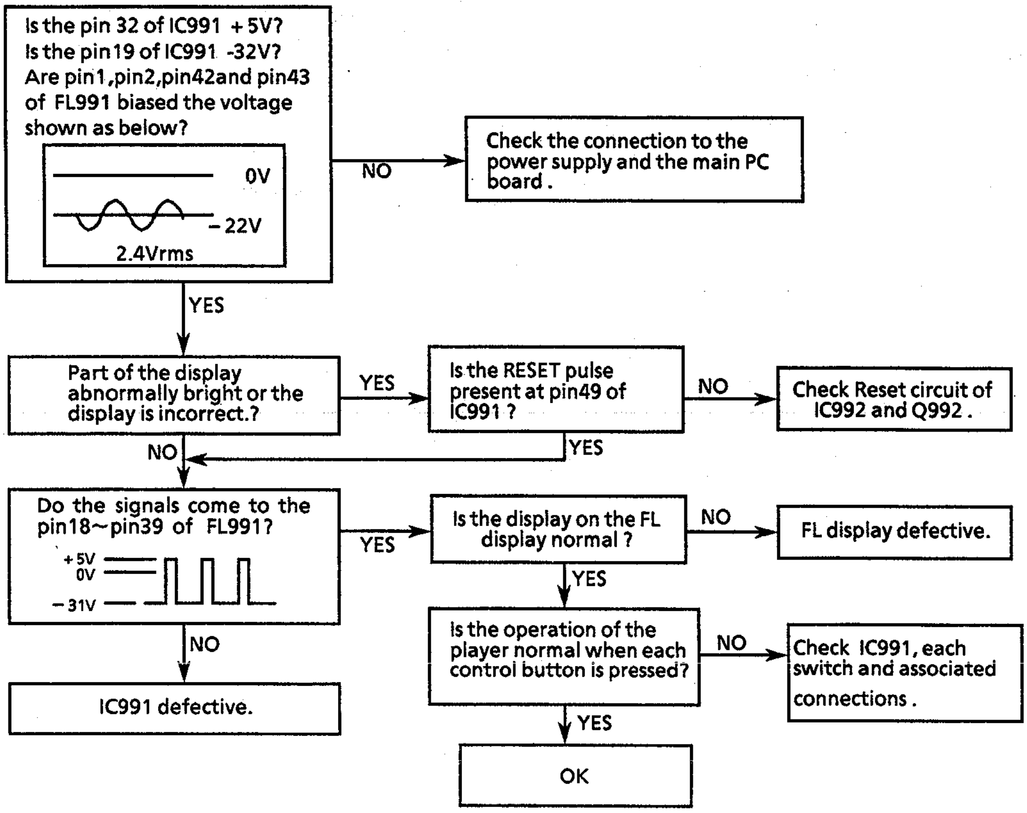


Troubleshooting

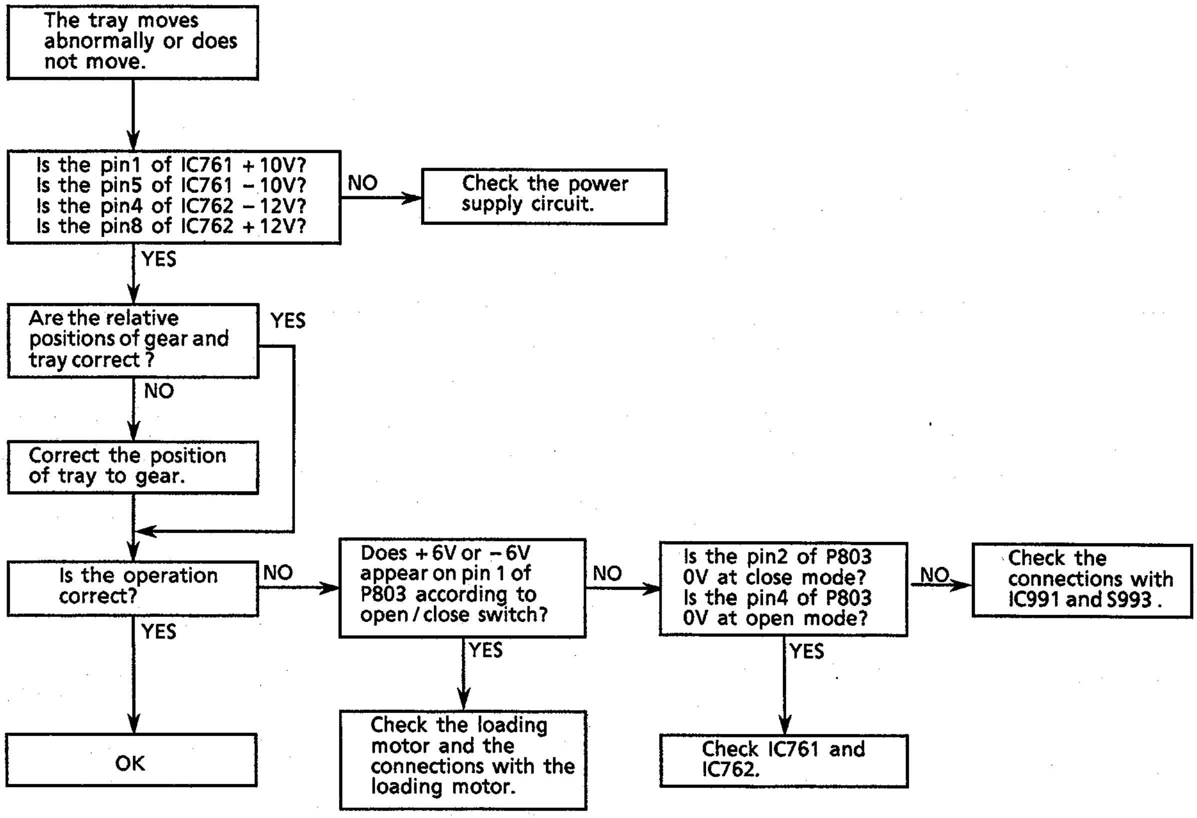
The following shows the status of the various circuits from turning on the power to start of disc play .


Power on
Does the FL indication light correctly?
NO
See front circuit section.
YES
Does the disc tray be moved in and out using OPEN / CLOSE button?
NO
See loading circuit section.
YES
Does the indications on the FL display show- - - when the disc tray is closed?
NO
YES
Can it read TOC?
NO
Does the disc rotate?
NO
Does the pickup lens move up and down after the disc tray is closed?
NO
Is pin5 of P802 0V?
NO
See feed servo circuit section.
YES
See focus servo circuit section.
YES
See tracking servo circuit section.
See feed servo circuit section.
See spindle servo circuit section.
NO
Can it play the first track?
YES
Is the tracking loop applied?
TP6(TE)
0V
Can a 1V / div., 0.5sec. / div waveform be observed?
YES
NO
See tracking servo circuit section.
YES
Does the laser light for approximately 8 seconds after the tray is closed?(Check the laserly power meter)
NO
Is pin37 of IC991 +5V for approx. 8sec. after closing the disc tray?
NO
YES
Check the pickup and the connections with P801 and the pickup.
Check the con-nections with IC991 and P801.
YES
See spindle servo circuit section.
See focus servo circuit section.
See tracking servo circuit section.
See feed servo circuit section.
NO
Can it search to each track correctly?
YES
To audio circuit section.
NO
Does it sound OK?
YES
Does the RF signal come at TP8 when the disc is rotated?
YES
NO
Check the RF circuit and pickup.
·Adjust the PLL free-running frequency.
·Check the Auto slicer circuit.
Check general operations.
See front circuit section.
NO
Are all operation keys on the front panel and the FL display correct?
YES
OK

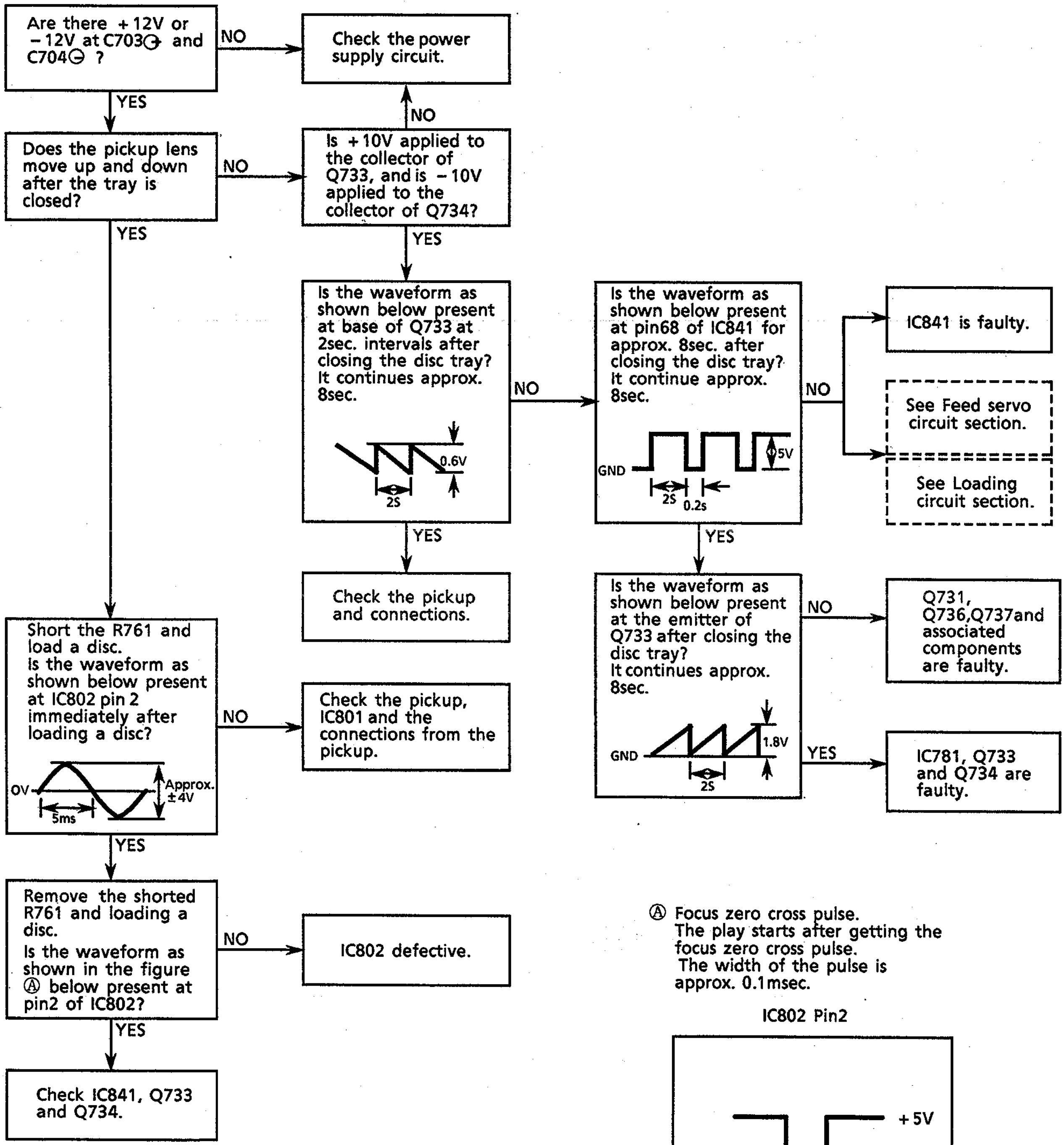
Front circuit Section


Is the pin 32 of IC991 +5V?
Is the pin19 of IC991 -32V?
Are pin1,pin2,pin42and pin43 of FL991 biased the voltage shown as below?
0V
-22V
2.4Vrms
NO
Check the connection to the power supply and the main PC board.
YES
Part of the display abnormally bright or the display is incorrect.?
YES
Is the RESET pulse present at pin49 of IC991 ?
NO
Check Reset circuit of IC992 and Q992.
NO
YES
Do the signals come to the pin18~pin39 of FL991?
+5V
0V
-31V
YES
Is the display on the FL display normal ?
NO
FL display defective.
YES
NO
IC991 defective.
Is the operation of the player normal when each control button is pressed?
NO
Check IC991, each switch and associated connections.
YES
OK

Loading circuit section

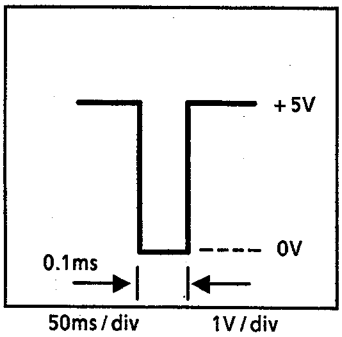

The tray moves abnormally or does not move.
Is the pin1 of IC761 +10V?
Is the pin5 of IC761 -10V?
Is the pin4 of IC762 -12V?
Is the pin8 of IC762 +12V?
NO
Check the power supply circuit.
YES
Are the relative positions of gear and tray correct ?
YES
NO
Correct the position of tray to gear.
Is the operation correct?
NO
Does +6V or -6V appear on pin 1 of P803 according to open/close switch?
NO
Is the pin2 of P803 0V at close mode?
Is the pin4 of P803 0V at open mode?
NO
Check the connections with IC991 and S993.
YES
OK
YES
Check the loading motor and the connections with the loading motor.
YES
Check IC761 and IC762.

Focus circuit section

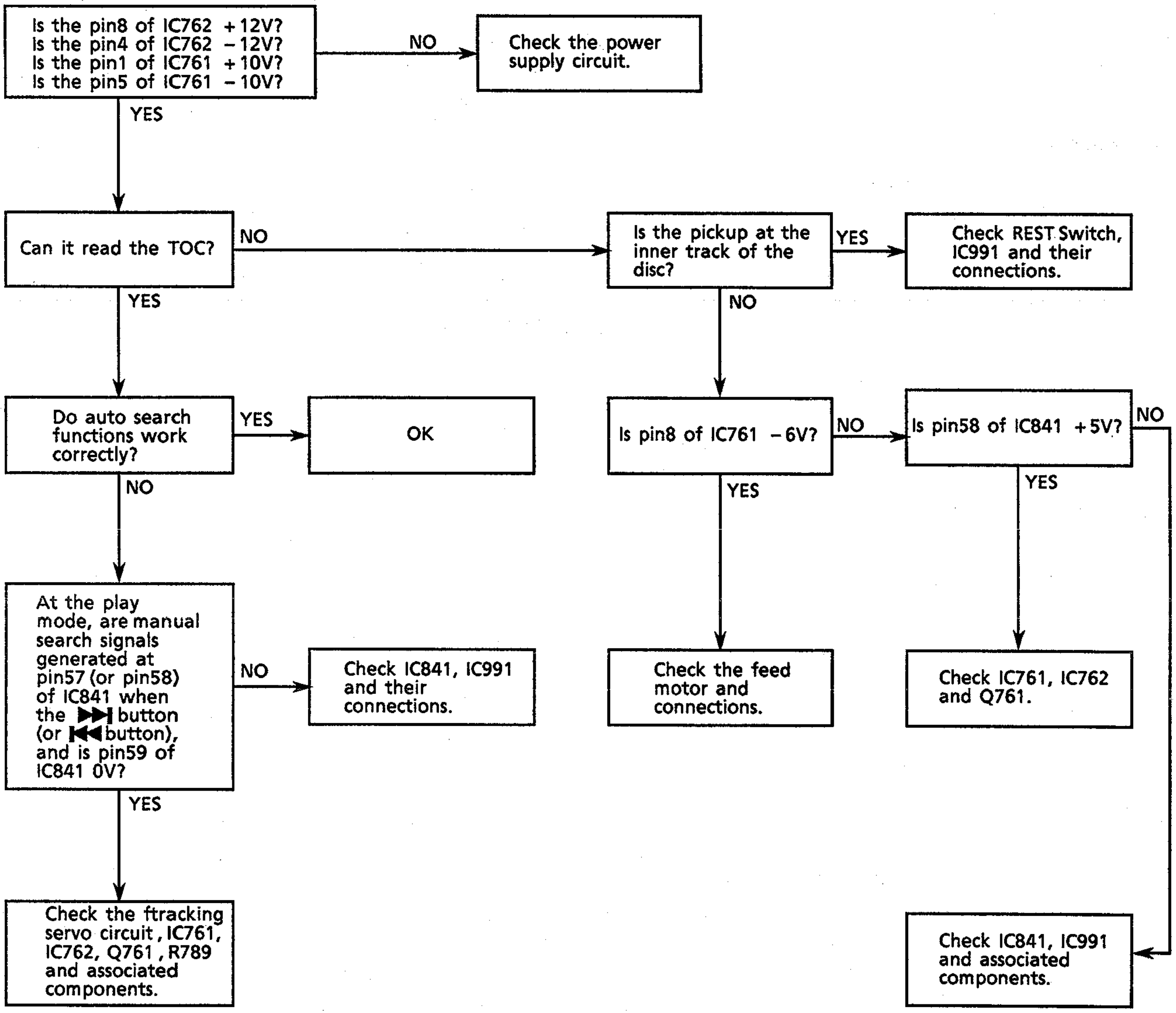

Are there +12V or −12V at C703⊕ and C704⊖ ?
NO
Check the power supply circuit.
YES
Does the pickup lens move up and down after the tray is closed?
NO
Is +10V applied to the collector of Q733, and is −10V applied to the collector of Q734?
NO
YES
Is the waveform as shown below present at base of Q733 at 2sec. intervals after closing the disc tray? It continues approx. 8sec.
0.6V
2S
NO
Is the waveform as shown below present at pin68 of IC841 for approx. 8sec. after closing the disc tray? It continue approx. 8sec.
GND
5V
2S
0.2s
NO
IC841 is faulty.
See Feed servo circuit section.
See Loading circuit section.
YES
Check the pickup and connections.
YES
Is the waveform as shown below present at the emitter of Q733 after closing the disc tray? It continues approx. 8sec.
GND
1.8V
2S
NO
Q731, Q736,Q737and associated components are faulty.
YES
IC781, Q733 and Q734 are faulty.
YES
Short the R761 and load a disc. Is the waveform as shown below present at IC802 pin 2 immediately after loading a disc?
0V
Approx. ±4V
5ms
NO
Check the pickup, IC801 and the connections from the pickup.
YES
Remove the shorted R761 and loading a disc. Is the waveform as shown in the figure Ⓐ below present at pin2 of IC802?
NO
IC802 defective.
YES
Check IC841, Q733 and Q734.

Ⓐ Focus zero cross pulse.
The play starts after getting the focus zero cross pulse.
The width of the pulse is approx. 0.1msec.

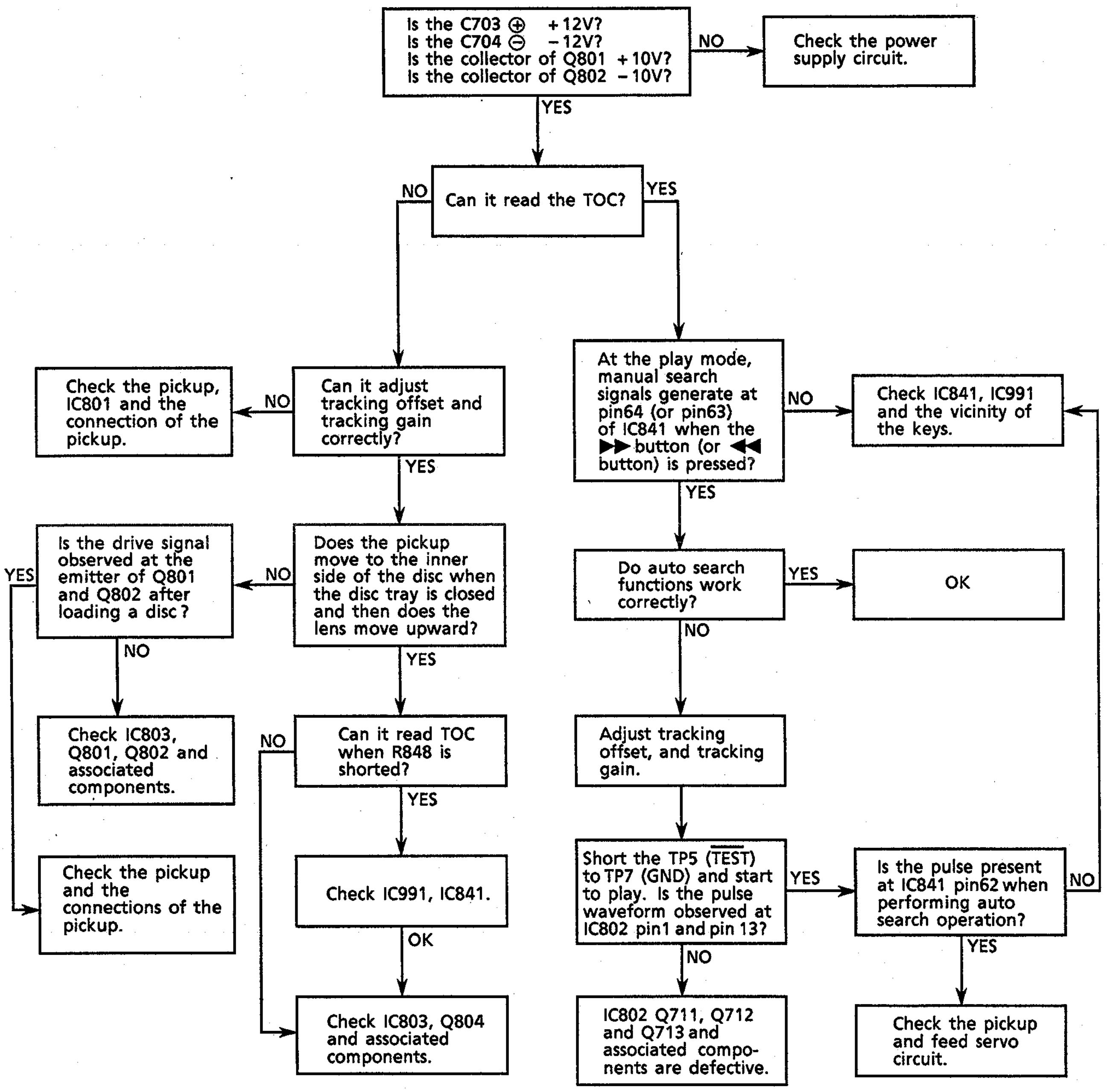
IC802 Pin2


+5V
0V
0.1ms
50ms/div
1V/div

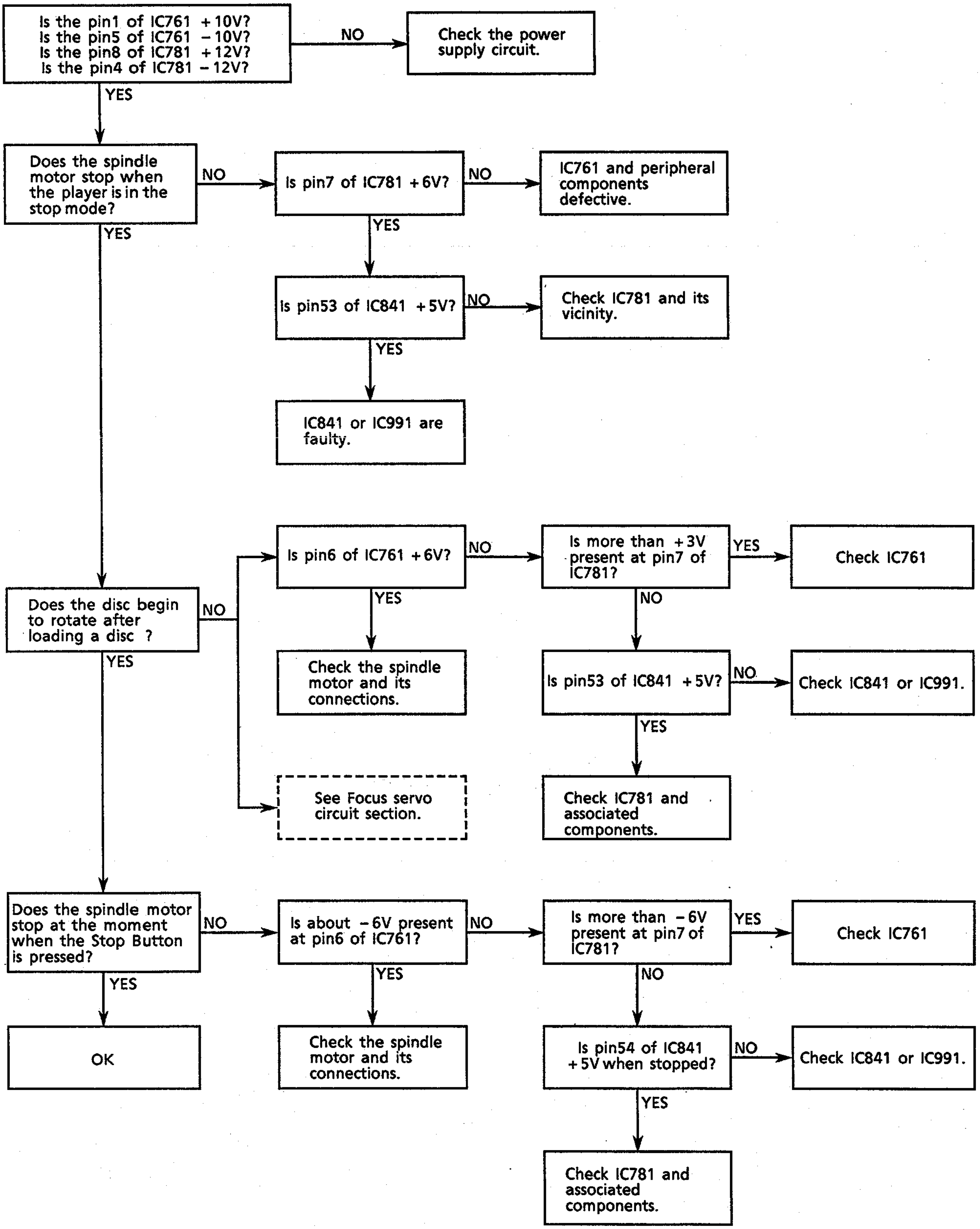
Feed circuit section


Is the pin8 of IC762 +12V?
Is the pin4 of IC762 −12V?
Is the pin1 of IC761 +10V?
Is the pin5 of IC761 −10V?
NO
Check the power supply circuit.
YES
Can it read the TOC?
NO
Is the pickup at the inner track of the disc?
YES
Check REST Switch, IC991 and their connections.
YES
NO
Do auto search functions work correctly?
YES
OK
Is pin8 of IC761 −6V?
NO
Is pin58 of IC841 +5V?
NO
NO
YES
YES
At the play mode, are manual search signals generated at pin57 (or pin58) of IC841 when the ⏭ button (or ⏮ button), and is pin59 of IC841 0V?
NO
Check IC841, IC991 and their connections.
Check the feed motor and connections.
Check IC761, IC762 and Q761.
YES
Check the ftracking servo circuit, IC761, IC762, Q761, R789 and associated components.
Check IC841, IC991 and associated components.

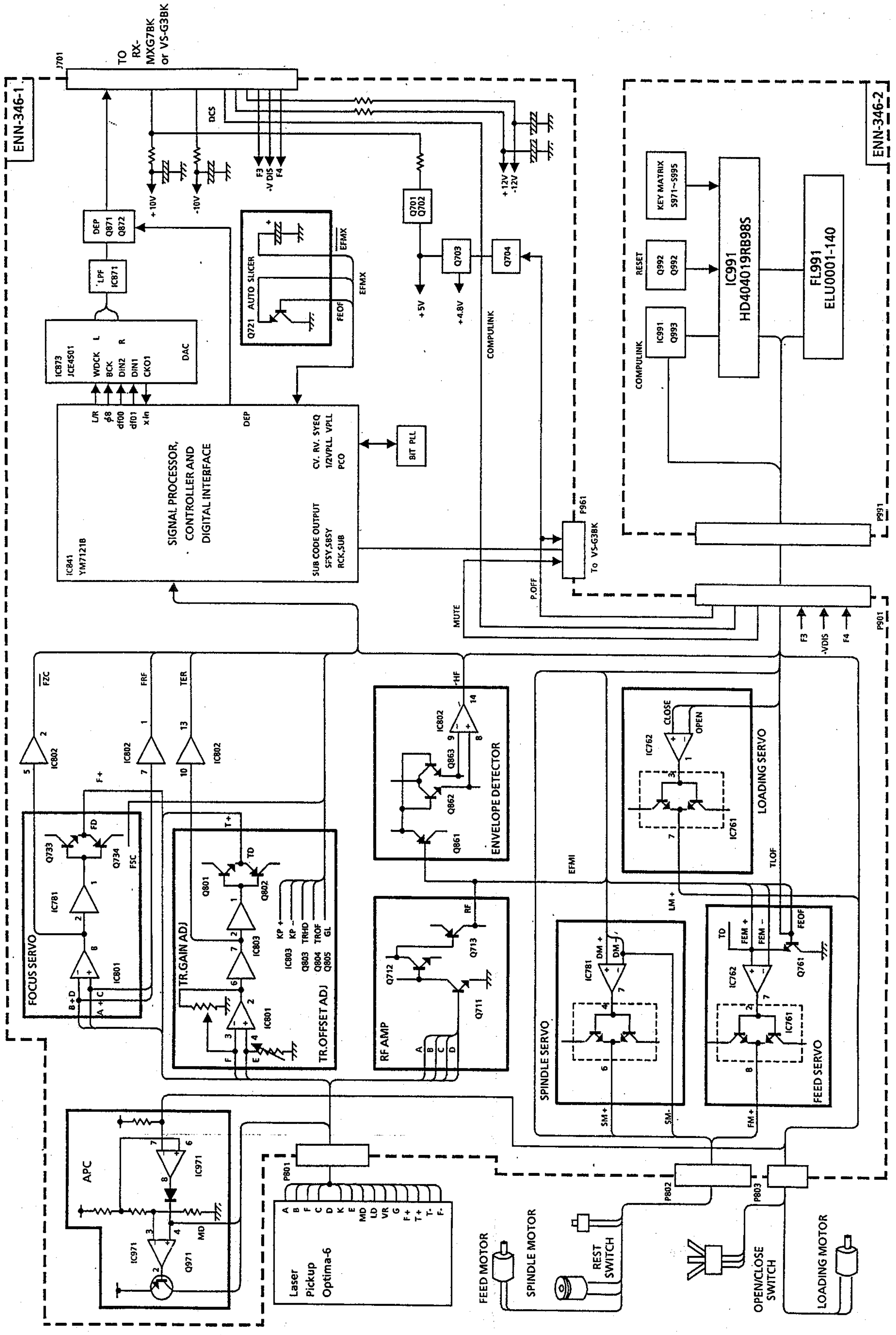
Tracking circuit section


Is the C703 ⊕ +12V?
Is the C704 ⊖ −12V?
Is the collector of Q801 +10V?
Is the collector of Q802 −10V?
NO
Check the power supply circuit.
YES
Can it read the TOC?
NO
YES
Can it adjust tracking offset and tracking gain correctly?
NO
Check the pickup, IC801 and the connection of the pickup.
YES
Does the pickup move to the inner side of the disc when the disc tray is closed and then does the lens move upward?
NO
Is the drive signal observed at the emitter of Q801 and Q802 after loading a disc?
YES
NO
Check IC803, Q801, Q802 and associated components.
Check the pickup and the connections of the pickup.
YES
Can it read TOC when R848 is shorted?
NO
YES
Check IC991, IC841.
OK
Check IC803, Q804 and associated components.
At the play mode, manual search signals generate at pin64 (or pin63) of IC841 when the ▶▶ button (or ◀◀ button) is pressed?
NO
Check IC841, IC991 and the vicinity of the keys.
YES
Do auto search functions work correctly?
YES
OK
NO
Adjust tracking offset, and tracking gain.
Short the TP5 (TEST) to TP7 (GND) and start to play. Is the pulse waveform observed at IC802 pin1 and pin 13?
YES
Is the pulse present at IC841 pin62 when performing auto search operation?
NO
YES
Check the pickup and feed servo circuit.
NO
IC802 Q711, Q712 and Q713 and associated components are defective.

Spindle circuit section

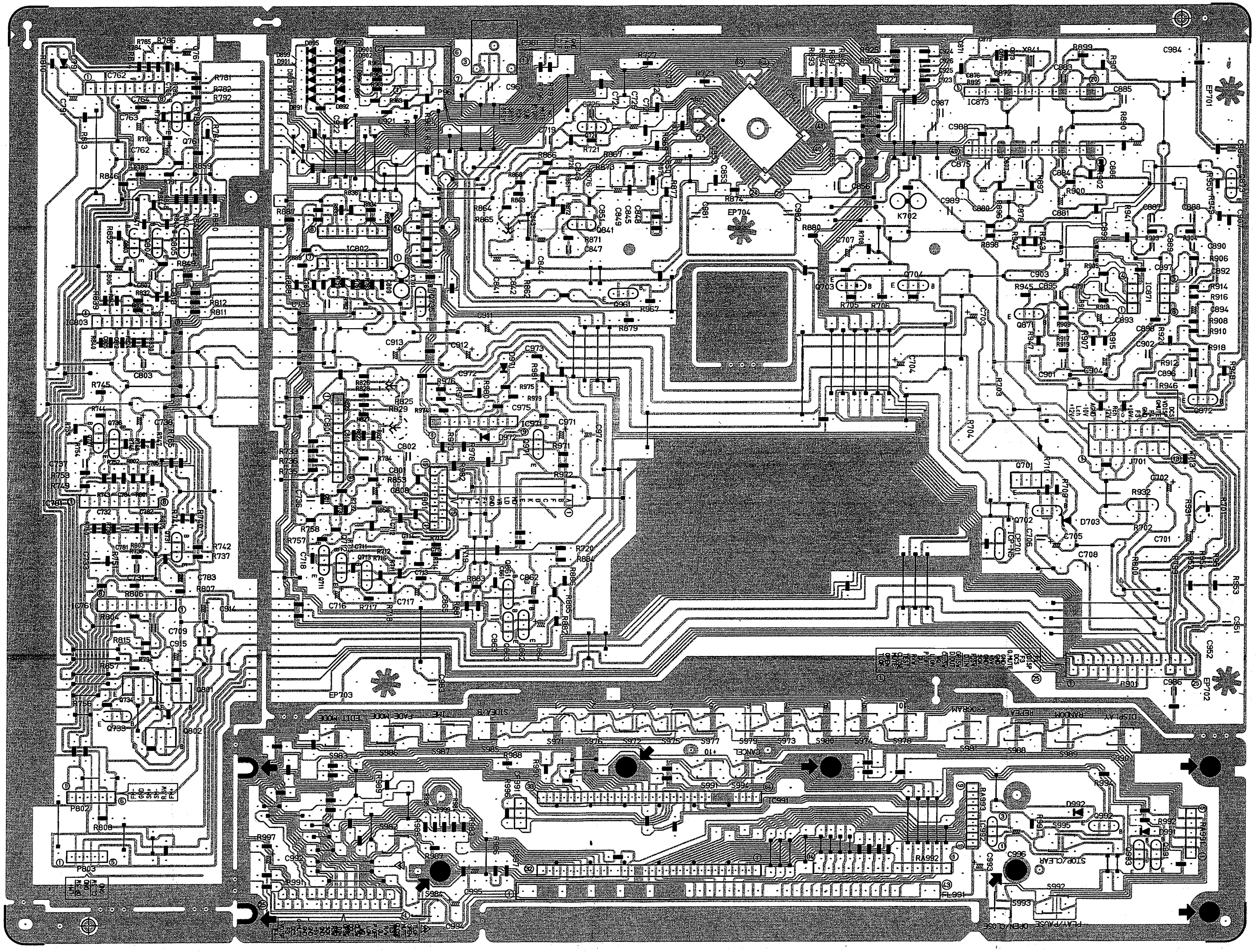

Is the pin1 of IC761 +10V?
Is the pin5 of IC761 −10V?
Is the pin8 of IC781 +12V?
Is the pin4 of IC781 −12V?
NO
Check the power supply circuit.
YES
Does the spindle motor stop when the player is in the stop mode?
NO
Is pin7 of IC781 +6V?
NO
IC761 and peripheral components defective.
YES
Is pin53 of IC841 +5V?
NO
Check IC781 and its vicinity.
YES
IC841 or IC991 are faulty.
YES
Does the disc begin to rotate after loading a disc ?
NO
Is pin6 of IC761 +6V?
NO
Is more than +3V present at pin7 of IC781?
YES
Check IC761
YES
Check the spindle motor and its connections.
NO
Is pin53 of IC841 +5V?
NO
Check IC841 or IC991.
See Focus servo circuit section.
YES
Check IC781 and associated components.
YES
Does the spindle motor stop at the moment when the Stop Button is pressed?
NO
Is about −6V present at pin6 of IC761?
NO
Is more than −6V present at pin7 of IC781?
YES
Check IC761
YES
OK
YES
Check the spindle motor and its connections.
NO
Is pin54 of IC841 +5V when stopped?
NO
Check IC841 or IC991.
YES
Check IC781 and associated components.

Block Diagram

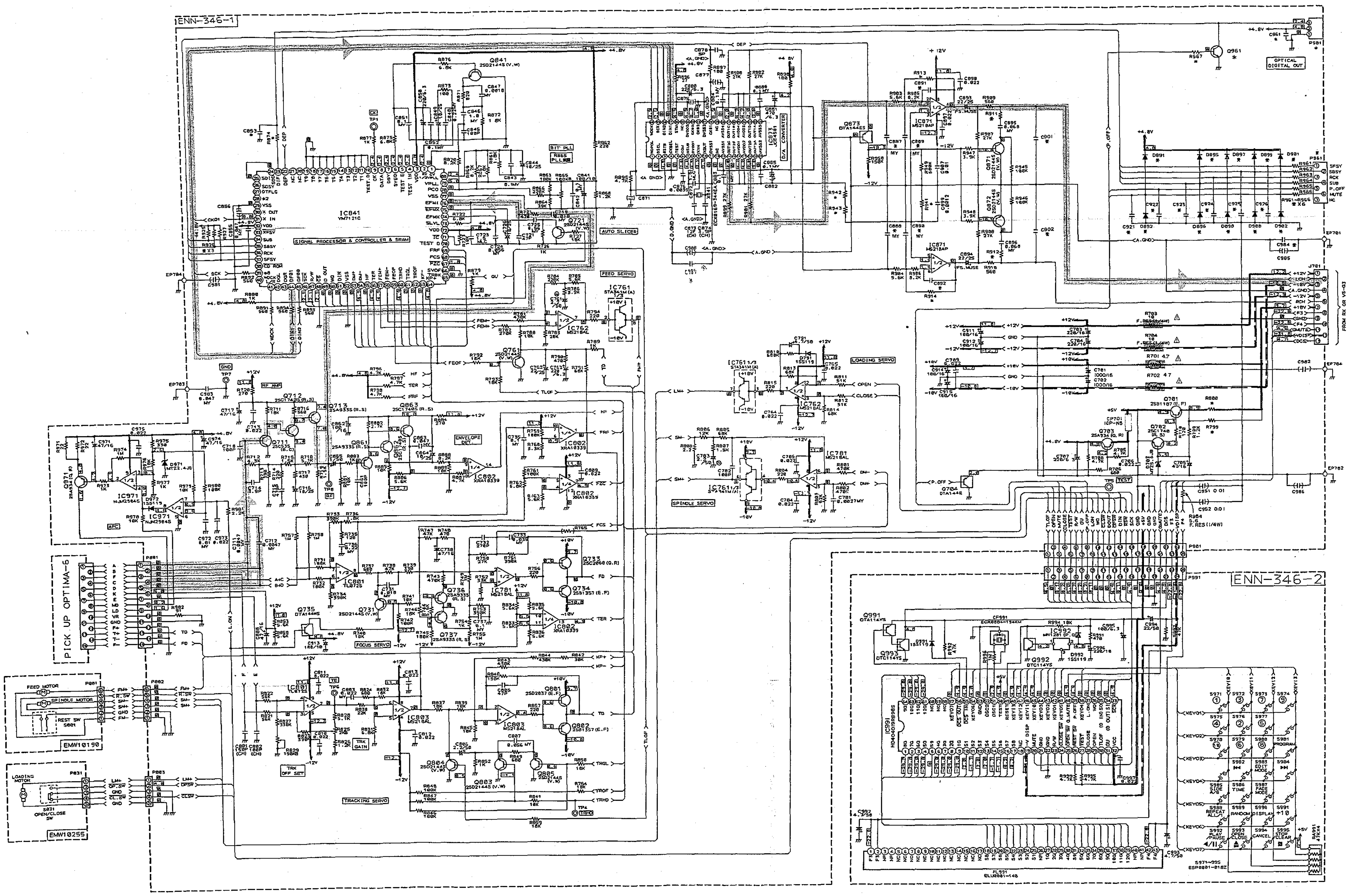

ENN-346-1
J701
TO RX-MXG7BK or VS-G3BK
DCS
+10V
-10V
F3
-V DIS
F4
+12V
-12V
DEP Q871 Q872
LPF IC871
IC873 JCE4501
WDCK BCK DIN2 DIN1 CKO1
L R
DAC
AUTO SLICER
Q221
EFMX
FEOF
Q701 Q702
Q703
Q704
+5V
+4.8V
COMPULINK
L/R
φ8
df00
df01
x In
DEP
SIGNAL PROCESSOR, CONTROLLER AND DIGITAL INTERFACE
IC841 YM7121B
CV, RV, SYEQ
1/2VPLL, VPLL
PCO
BIT PLL
SUB CODE OUTPUT
SFSY, SBSY
RCK, SUB
P961
To VS-G3BK
P.OFF
MUTE
ENN-346-2
KEY MATRIX S971~S995
RESET Q992 Q992
COMPULINK IC991 Q993
IC991 HD404019RB98S
FL991 ELU0001-140
P991
P901
F3
-VDIS
F4
FZC
FRF
TER
IC802
F+
FD
Q733
Q734
FSC
IC781
IC801
FOCUS SERVO
B+D
A+C
T+
TD
Q801
Q802
IC803
KP+
KP-
TRHD
TROF
GL
IC803
Q803
Q804
Q805
TR.GAIN ADJ
TR.OFFSET ADJ
F
E
HF
IC802
Q863
Q862
Q861
ENVELOPE DETECTOR
RF
Q713
Q712
Q711
RF AMP
A B C D
EFMI
CLOSE
OPEN
IC762
IC761
LOADING SERVO
TLOF
LM+
DM+
DM-
IC781
SPINDLE SERVO
SM+
SM-
TD
FEM+
FEM-
FEOF
Q761
IC762
IC761
FEED SERVO
FM+
APC
IC971
Q971
MD
P801
A B F C D K E MD LD VR G F+ T+ T- F-
Laser Pickup Optima-6
P802
P803
FEED MOTOR
SPINDLE MOTOR
REST SWITCH
OPEN/CLOSE SWITCH
LOADING MOTOR

Printed Circuit Boards

■EMW10279-005 ENN-346


EP701
EP702
EP703
EP704
IC801
IC802
IC871
IC873
IC991
K702
X841
J701
P802
P803
P901
FL991
RA992
RA993
Q701
Q702
Q703
Q704
Q733
Q761
Q801
Q802
Q872
Q992
D703
D991
D992
EDIT MODE
FADE MODE
TIME
SIDE A/B
PROGRAM
REPEAT
RANDOM
DISPLAY
CANCEL
+10
STOP/CLEAR
PLAY/PAUSE
OPEN/CLOSE

Schematic Diagram ■ Tuner Section


ENN-346-1
ENN-346-2
IC841
SIGNAL PROCESSOR & CONTROLLER & SRAM
BIT PLL
AUTO SLICER
FEED SERVO
FOCUS SERVO
TRACKING SERVO
SPINDLE SERVO
LOADING SERVO
ENVELOPE DET
RF AMP
APC
IC871
D/A CONVERTER
OPTICAL DIGITAL OUT
TO VS-03
FROM RX OR VS-03
PICK UP OPTIMA-6
FEED MOTOR
SPINDLE MOTOR
REST SW
EMW10190
LOADING MOTOR
OPEN/CLOSE SW
EMW10255
IC931
FL931

* MARK

Symbol \ Ver.	C	D	E
R925 ∫ R927	1K×3	NONE	NONE
R961 ∫ R966	68×6	NONE	NONE
D891 D892	ISS119	NONE	NONE
D895 ∫ D902	ISS119×8	NONE	NONE
C921 ∫ C926	68P×6	NONE	NONE
P961	USED	NONE	NONE
C984	0.047	0.047	NONE
C887 C888	680P	680P	0.001
C889 C890	680P	680P	0.0018
C891 C892	150P	150P	120P
R911 R912	220	220	180
C901 C902	NONE	NONE	0.012

Notes:

1. ——— indicates+B power supply.
2. – – – indicates–B power supply.
3. ▨ indicates main signal path.
4. When replacing the parts in the shaded are (▨) and those marked with △, be sure to use the designated parts to ensure safety.
5. The design and contents are subject to change without notice.

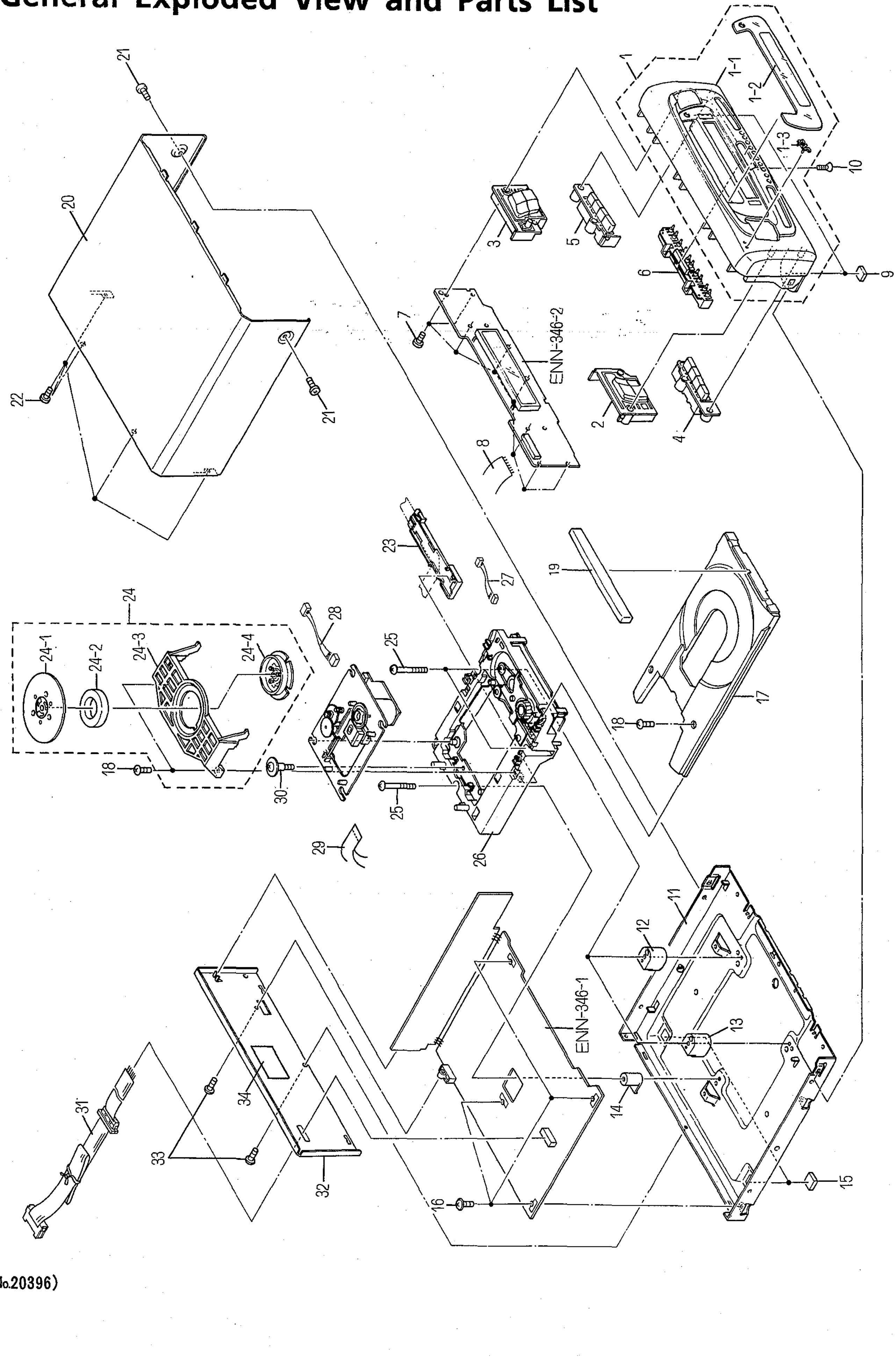
PARTS LIST

Note :.All printed circuit boards and its assemblies are not available as service parts.

Contents

General Exploded View and Parts List 2-2
CD Mechanism Ass'y and Parts List 2-4
Printed Circuit Board Ass'y and Parts List 2-6
■ ENN-346 ☐ CD PC Board Ass'y .... 2 -6

General Exploded View and Parts List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ENN-346-2
ENN-346-1

■ Parts List

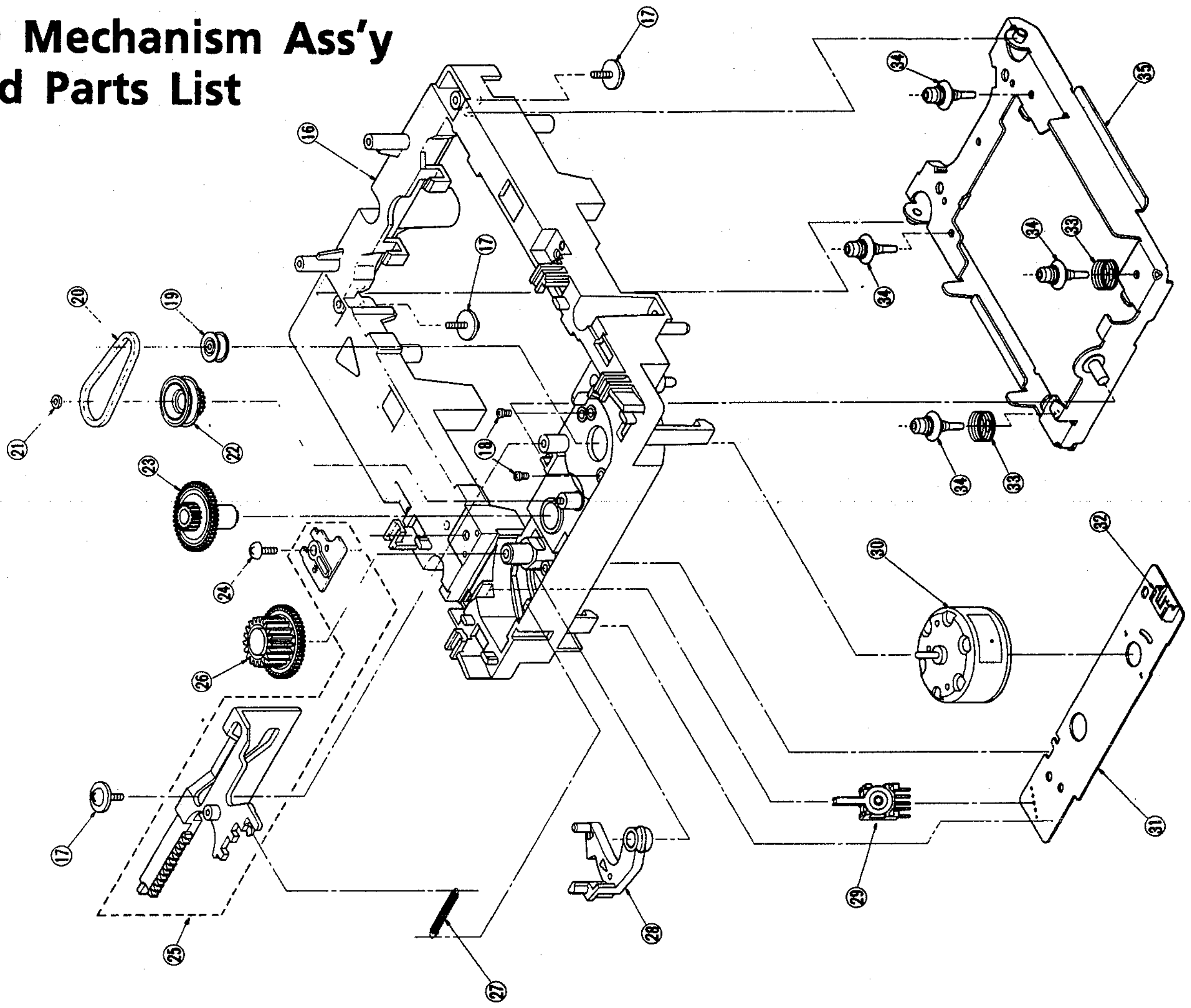
⚠	Item	Part Number	Part Name	Q'ty	Description	Area
	1	EFP-XLMXG7BKE(S	FRONT PANEL ASSY	1		
	1-1	E102630-003	FRONT PANEL	1		
	1-2	E207658-002	WINDOW SCREEN	1		
	1-3	E406971-221	JVC MARK	1		
	2	E207627-001	PUSH BUTTON	1	SERACH	
	3	E207629-001	PUSH BUTTON	1	PLAY	
	4	E207631-001	PUSH BUTTON	1	SKIP	
	5	E207633-001	PUSH BUTTON	1	EDIT	
	6	E207635-002	PUSH BUTTON	1	10KEY	
	7	SDSF2608Z	SCREW	8		
	8	EWR125K-15TT	FLAT WIRE	1	25PIN	
	9	E406855-008	SPACER	2	FRONT FOOT	
	10	SSST3006M	SCREW	1		
	11	E102467-002	CHASSIS BASE	1		
	12	E308199-001	MECHA STAND	1		
	13	E308200-001	MECHA STAND	1		
	14	E308201-001	MECHA STAND	1		
	15	E406855-011	SPACER	2	REAR FOOT	
	16	GBSG3008CC	SCREW	4		
	17	E102358-222	CD TRAY	1		
	18	SBSF3008M	SCREW	3		
	19	E308196-001	CD FITTING	1		
	20	E207626-001	METAL COVER	1		
	21	SDSG3008M	SCREW	2		
	22	E73273-003	SPECIAL SCREW	4		
	23	E308181-001	FFC HOLDER	1		
	24	E306837-005	CLAMPER ASSY	1		
	24-1	E26756-002	CLAMPER BASE	1		
	24-2	E306835-001	CD CLAMPER	1		
	24-3	E74897-002	MAGNET	2		
	24-4	E306836-003	YOKE PLATE	1		
	25	SBST3027Z	SCREW	3		
	26	--------------------	CD MECHANISM UNIT ASSY	1	See page 2-4	
	27	EWS265-B410	SOCKET WIRE	1		
	28	EWS266-B411	SOCKET WIRE	1	6PIN	
	29	EWPZ02-001	FFC CABLE	1	5PIN	
	30	E406293-001	SPECIAL SCREW	1		
	31	EWP907-016	PLUG CORD ASSY	1		
	32	E207637-004	REAR PANEL	1		A
	32	E207637-004	REAR PANEL	1		BS
	32	E207637-004	REAR PANEL	1		EF
	32	E207637-004	REAR PANEL	1		EN
	32	E207637-004	REAR PANEL	1		G
	32	E207637-004	REAR PANEL	1		GI
	32	E207637-003	REAR PANEL	1		U
	32	E207637-003	REAR PANEL	1		UT
	33	SBSG3008CC	SCREW	1		
	34	E406507-001	CAUTION LABEL	1		
	-	E61029-005	NUMBER LABEL	1		
	-	E70891-001	LABEL	1		

⚠ : Safety Parts

The Marks for Designated Areas

A	Australia	G	Germany	U	Universal Type
UT	Taiwan	BS	the U.K.	EF	Continental Europe
EN	Scandinavia	GI	Itary	No mark indicates all area.	

CD Mechanism Ass'y and Parts List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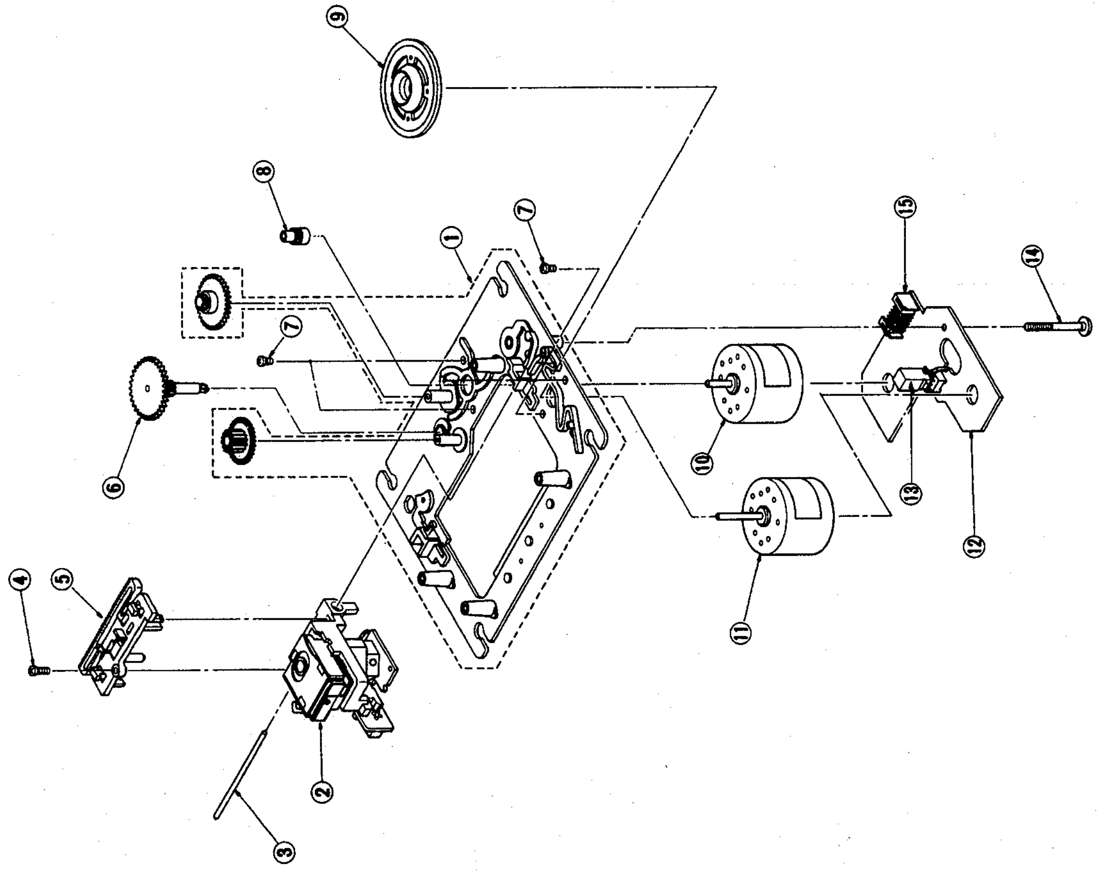
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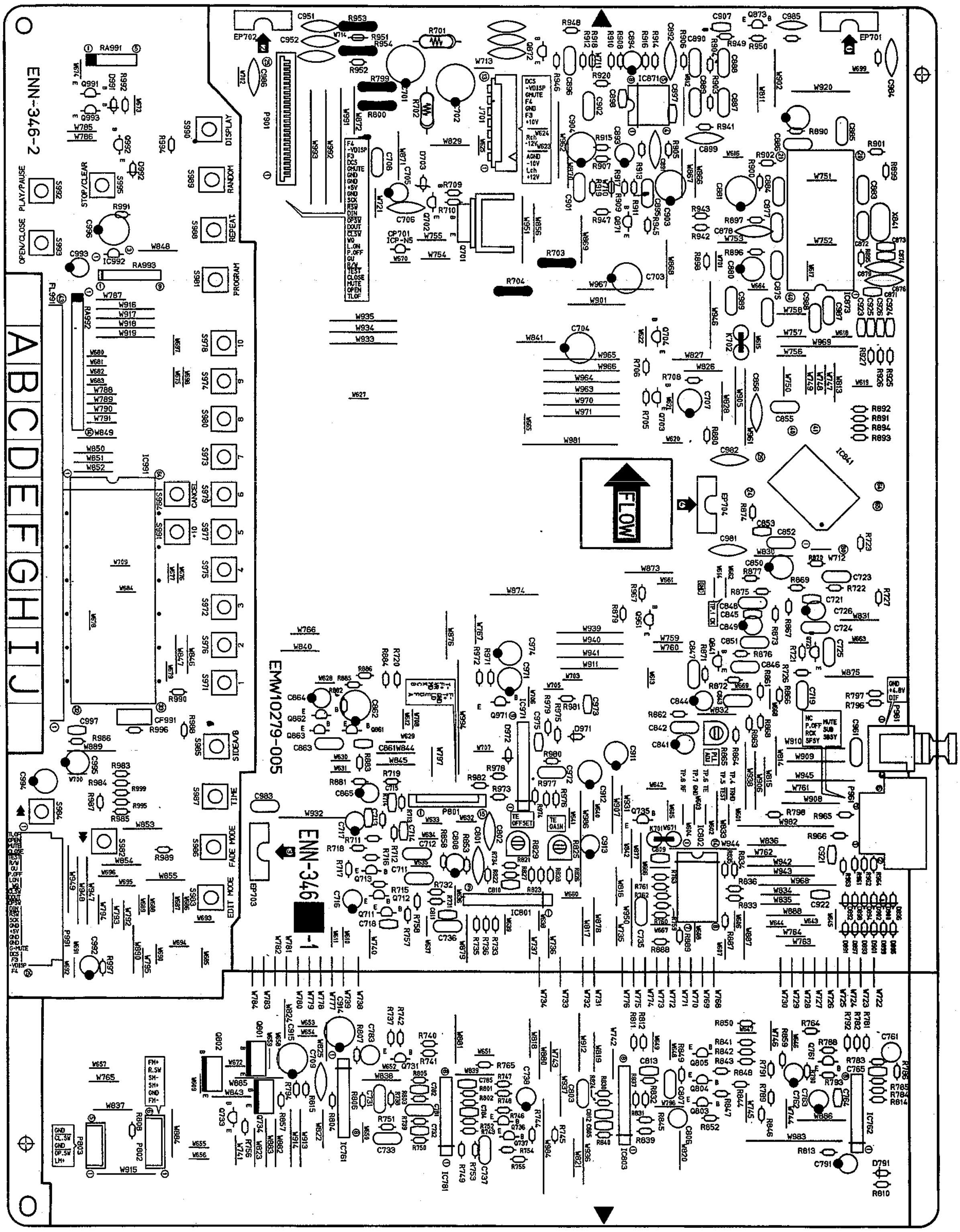
■ Parts List (CD Mechanism Ass'y)

Item	Part Number	Part Name	Q'ty	Description	Area
1	EPB-002A	MECHANISM BASE ASSY	1		
2	OPTIMA-6S	PICK UP ASS'Y	1		
3	E406777-001	SHAFT	1		
4	SDSF2006Z	SCREW	1		
5	E307746-001	CD RACK	1		
6	EPB-003A	MECHANISM BASE ASSY	1		
7	SDSP2003N	SCREW	4		
8	E406750-001	PINION GEAR	1		
9	EPB-001C	TURNTABLE	1		
10	E406784-001	DC MOTOR	1		
11	E406783-001	DC MOTOR	1		
12	EMW10190-001(S)	CIRCUIT BOARD	1		
13	ESB1100-005	LEAF SWITCH	1		
14	E75832-001	SPECIAL SCREW	1		
15	EMV5109-006B	PLUG ASSY	1	6PIN	
16	E102357-221	LOADING BASE	1		
17	E65923-003	SCREW	3		
18	SPSK2640Z	SCREW	2		
19	E75984-001	MOTOR PULLEY	1		
20	E75950-002	BELT	1		
21	E72024-001	SPEED NUT	1		
22	E75985-001	GEAR	1		
23	E75986-002	GEAR	1		
24	SBSF3008Z	SCREW	1		
25	E307252-221	CAM - PLATE	1		
26	E75987-001	REEL GEAR	1		
27	E75989-001	SPRING	1		
28	E307162-221	LEVER	1		
29	ESS1200-002	SLIDE SWITCH	1		
30	RF-500TB-12560	MOTOR	1		
31	EMW10255-002(S)	CIRCUIT BOARD	1		
32	EMV5109-005B	PLUG ASSY	1	5PIN	
33	E406871-001	SPRING	2		
34	E406294-002	INSULATOR	4		
35	E307179-221	ELEVATOR BASE ASSY	1		

Printed Circuit Board Ass'y and Parts List

■ENN-346 □ CD PC Board Ass'y

Note : ENN-346 □ varies according to the areas employed. See note (1) when placing an order.


ENN-346-2
EMW10279-005
ENN-346 -1
FLOW
A
B
C
D
E
F
G
H
I
J
OPEN/CLOSE
PLAY/PAUSE
STOP/CLEAR
DISPLAY
RANDOM
REPEAT
PROGRAM
SIDE A/B
TIME
FADE MODE
EDIT MODE
IC991
IC992
IC871
IC941
IC801
IC761
IC781
IC762
IC603
P301
P801
P991
P802
P803
EP701
EP702
EP703
EP704
J701
TE OFFSET
TE GAIN

Note (1)

PC Board Ass'y	Designated Areas
ENN-346 D	Australia the U.K. Continental Europe Scandinavia
ENN-346 E	Germany Italy
ENJ-063 C	Universal Type Taiwan

TRANSISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q701	2SB1187(E,F)	SILICON ROHM	
	Q702	2SC1740(R,S)	SILICON ROHM	
	Q703	2SA934(Q,R)	SILICON ROHM	
	Q704	DTA144ES	SILICON ROHM	
	Q711	2SC535(B,C)	SILICON HITACHI	
	Q712	2SC1740S(R,S)	SILICON ROHM	
	Q713	2SA933S(R,S)	SILICON ROHM	
	Q721	2SD2144S(VW)	SILICON ROHM	
	Q731	2SD2144S(VW)	SILICON ROHM	
	Q733	2SC2060(Q,R)	SILICON ROHM	
	Q734	2SB1357(E,F)	SILICON ROHM	
	Q735	DTA144WS	SILICON ROHM	
	Q736	2SA933S(R,S)	SILICON ROHM	
	Q737	2SA933S(R,S)	SILICON ROHM	
	Q761	2SD2144S(VW)	SILICON ROHM	
	Q801	2SD2037(E,F)	SILICON ROHM	
	Q802	2SB1357(E,F)	SILICON ROHM	
	Q803	2SD2144S(VW)	SILICON ROHM	
	Q804	2SD2144S(VW)	SILICON ROHM	
	Q805	2SD2144S(VW)	SILICON ROHM	
	Q841	2SD2144S(VW)	SILICON ROHM	
	Q861	2SA933S(R,S)	SILICON ROHM	
	Q862	2SC1740S(R,S)	SILICON ROHM	
	Q863	2SC1740S(R,S)	SILICON ROHM	
	Q871	2SD2144S(VW)	SILICON ROHM	
	Q872	2SD2144S(VW)	SILICON ROHM	
	Q873	DTA144ES	SILICON ROHM	
	Q971	2SA934(Q,R)	SILICON ROHM	
	Q991	DTA114YS	SILICON ROHM	
	Q992	DTC114YS	SILICON ROHM	
	Q993	DTC114YS	SILICON ROHM	

⚠ : SAFETY PARTS

I. C. S.

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC761	STA341M(A)	I.C. SANKEN	
	IC762	M5218AL	I.C. MITSUBISHI	
	IC781	M5218AL	I.C. MITSUBISHI	
	IC801	NJM072S	I.C. DAINICHI	
	IC802	XRA10339	I.C. EXAR JAPAN	
	IC803	M5218AL	I.C. MITSUBISHI	
	IC841	YM7121C	I.C. YAMAHA	
	IC871	M5218AP	I.C. MITSUBISHI	
	IC873	JCE4501	I.C. MATSUSHITA	
	IC971	NJM2904S	I.C. DAINICHI	
	IC991	HD404019RC13S	I.C. HITACHI	
	IC992	MN1281(P,Q)	I.C. MATSUSHITA	

⚠ : SAFETY PARTS

DIODES

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D703	MTZ5.6JB	ZENER ROHM	
	D791	1SS119	SILICON HITACHI	
	D891	1SS119	SILICON HITACHI	C
	D892	1SS119	SILICON HITACHI	C
	D895	1SS119	SILICON HITACHI	C
	D896	1SS119	SILICON HITACHI	C
	D897	1SS119	SILICON HITACHI	C
	D898	1SS119	SILICON HITACHI	C
	D899	1SS119	SILICON HITACHI	C
	D900	1SS119	SILICON HITACHI	C
	D901	1SS119	SILICON HITACHI	C
	D902	1SS119	SILICON HITACHI	C
	D971	MTZ2.4JB	ZENER ROHM	
	D972	1SS119	SILICON HITACHI	
	D991	1SS119	SILICON HITACHI	
	D992	1SS119	SILICON HITACHI	

⚠ : SAFETY PARTS

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C701	QETB1CM-108	1000MF 16V ELECTRO	
	C702	QETB1CM-108	1000MF 16V ELECTRO	
	C703	QETB1CM-227	220MF 16V ELECTRO	
	C704	QETB1CM-227	220MF 16V ELECTRO	
	C705	QETB1CM-476	47MF 16V ELECTRO	
	C706	QCF21HP-223	0.022MF 50V CERAMIC	
	C707	QETB0JM-227	220MF 6.3V ELECTRO	
	C709	QCF21HP-223	0.022MF 50V CERAMIC	
	C711	QFN81HJ-472	4700PF 50V MYLAR	
	C712	QFN81HJ-472	4700PF 50V MYLAR	
	C713	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C714	QCSB1HK-3R9	3.9PF 50V CERAMIC	
	C715	QCBB1HK-471	470PF 50V CERAMIC	
	C716	QETB1EM-106	10MF 25V ELECTRO	
	C717	QETB1CM-476	47MF 16V ELECTRO	
	C718	QCBB1HK-101	100PF 50V CERAMIC	
	C719	QFN81HJ-183	0.018MF 50V MYLAR	
	C721	QCSB1HJ-470	47PF 50V CERAMIC	
	C723	QCZ0202-155	1.5MF 25V CERAMIC	
	C724	QFN81HJ-563	0.056MF 50V MYLAR	
	C725	QFVB1HJ-564N	0.56MF 50V T.FILM	
	C726	QETB1EM-106	10MF 25V ELECTRO	
	C731	QFN81HJ-183	0.018MF 50V MYLAR	
	C732	QCBB1HK-271	270PF 50V CERAMIC	
	C733	QFN81HJ-393	0.039MF 50V MYLAR	
	C735	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C736	QFVB1HJ-224N	0.22MF 50V T.FILM	
	C737	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C738	QETB1CM-476	47MF 16V ELECTRO	
	C761	QEN51HM-225	2.2MF 50V NON POLE	
	C762	QETB1EM-226	22MF 25V ELECTRO	
	C763	QETB0JM-227	220MF 6.3V ELECTRO	
	C764	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C765	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C781	QFN81HJ-272	2700PF 50V MYLAR	
	C782	QCBB1HK-101	100PF 50V CERAMIC	
	C783	QEN51HM-225	2.2MF 50V NON POLE	
	C784	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C785	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C791	QETB1HM-475	4.7MF 50V ELECTRO	
	C801	QCT26CH-151	150PF 50V CERAMIC	
	C802	QCT26CH-101	100PF 50V CERAMIC	
	C803	QFN81HJ-223	0.022MF 50V MYLAR	
	C805	QCSB1HJ-470	47PF 50V CERAMIC	
	C806	QEN51HM-225	2.2MF 50V NON POLE	
	C807	QFN81HJ-563	0.056MF 50V MYLAR	
	C808	QETB1CM-476	47MF 16V ELECTRO	
	C809	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C810	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C811	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C812	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C813	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C841	QETB1AM-107	100MF 10V ELECTRO	
	C842	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C843	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C844	QETB1EM-106	10MF 25V ELECTRO	
	C845	QCBB1HK-101	100PF 50V CERAMIC	
	C846	QFVB1HJ-105N	1MF 50V T.FILM	
	C847	QFN81HJ-182	1800PF 50V MYLAR	
	C848	QFVB1HJ-224N	0.22MF 50V T.FILM	
	C849	QETB1EM-106	10MF 25V ELECTRO	
	C850	QETB0JM-227	220MF 6.3V ELECTRO	
	C851	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C852	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C855	QFN81HJ-473	0.047MF 50V MYLAR	
	C861	QCBB1HK-101	100PF 50V CERAMIC	
	C862	QER51CM-107	100MF 16V ELECTRO	
	C863	QFN81HJ-473	0.047MF 50V MYLAR	
	C864	QER51EM-106	10MF 25V ELECTRO	
	C865	QETB1HM-105	1MF 50V ELECTRO	
	C872	QCZ0202-155	1.5MF 25V CERAMIC	
	C873	QCT30CH-120	12PF 50V CERAMIC	
	C874	QCT30CH-3R9	3.9PF 50V CERAMIC	
	C876	QCY21HK-392	3900PF 50V CERAMIC	
	C878	QCS21HJ-5R0	5PF 50V CERAMIC	
	C880	QETB0JM-227	220MF 6.3V ELECTRO	
	C881	QETB0JM-477	470MF 6.3V ELECTRO	
	C883	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C884	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C885	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C886	QFVB1HJ-104N	0.1MF 50V T.FILM	
	C887	QFN81HJ-681	680PF 50V MYLAR	
	C888	QFN81HJ-681	680PF 50V MYLAR	
	C889	QFN81HJ-681	680PF 50V MYLAR	
	C890	QFN81HJ-681	680PF 50V MYLAR	
	C891	QCS21HJ-151	150PF 50V CERAMIC	
	C892	QCS21HJ-151	150PF 50V CERAMIC	
	C893	EEZ2505-226	22MF ELECTRO	
	C894	EEZ2505-226	22MF ELECTRO	
	C895	QFN81HJ-683	0.068MF 50V MYLAR	
	C896	QFN81HJ-683	0.068MF 50V MYLAR	
	C897	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C898	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C899	QCY21HK-122	1200PF 50V CERAMIC	
	C907	QCVB1CM-103	0.01MF 16V CERAMIC	

⚠ : SAFETY PARTS

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C911	QETB1CM-107	100MF 16V ELECTRO	
	C912	QETB1CM-107	100MF 16V ELECTRO	
	C913	QETB1AM-107	100MF 10V ELECTRO	
	C914	QETB1CM-107	100MF 16V ELECTRO	
	C915	QETB1CM-107	100MF 16V ELECTRO	
	C921	QCSB1HJ-680	68PF 50V CERAMIC	C
	C922	QCSB1HJ-680	68PF 50V CERAMIC	C
	C923	QCSB1HJ-680	68PF 50V CERAMIC	C
	C924	QCSB1HJ-680	68PF 50V CERAMIC	C
	C925	QCSB1HJ-680	68PF 50V CERAMIC	C
	C926	QCSB1HJ-680	68PF 50V CERAMIC	C
	C951	QCY21HK-103	0.01MF 50V CERAMIC	
	C952	QCY21HK-103	0.01MF 50V CERAMIC	
	C971	QER51CM-476	47MF 16V ELECTRO	
	C972	QFN81HJ-103	0.01MF 50V MYLAR	
	C973	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C974	QER51CM-476	47MF 16V ELECTRO	
	C975	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C983	QFN81HJ-473	0.047MF 50V MYLAR	
	C987	QCZ0202-155	1.5MF 25V CERAMIC	
	C992	QER51HM-475	4.7MF 50V ELECTRO	
	C993	QER51HM-475	4.7MF 50V ELECTRO	
	C994	QEK51HM-226	22MF 50V ELECTRO	
	C995	QER50JM-107	100MF 6.3V ELECTRO	
	C996	QER51AM-227	220MF 10V ELECTRO	
	C997	QCHB1EZ-223	0.022MF 25V CERAMIC	

⚠ : SAFETY PARTS

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
⚠	R701	PTH61G25AR4R7M	FUSIBLE RE	SI
⚠	R702	PTH61G25AR4R7M	FUSIBLE RE	SI
⚠	R703	QRZ0077-100	10 1/4W FUSIBLE	
⚠	R704	QRZ0077-100	10 1/4W FUSIBLE	
	R705	QRD167J-472	4.7K 1/6W CARBON	
	R706	QRD167J-681	680 1/6W CARBON	
	R708	QRD167J-472	4.7K 1/6W CARBON	
	R709	QRD167J-122	1.2K 1/6W CARBON	
	R710	QRD167J-121	120 1/6W CARBON	
	R711	QRD167J-183	18K 1/6W CARBON	
	R712	QRD167J-432	4.3K 1/6W CARBON	
	R713	QRD167J-391	390 1/6W CARBON	
	R714	QRD161J-221	220 1/6W CARBON	
	R715	QRD167J-152	1.5K 1/6W CARBON	
	R716	QRD167J-561	560 1/6W CARBON	
	R717	QRD167J-431	430 1/6W CARBON	
	R718	QRD167J-512	5.1K 1/6W CARBON	
	R719	QRD167J-152	1.5K 1/6W CARBON	
	R720	QRD167J-271	270 1/6W CARBON	
	R721	QRD167J-471	470 1/6W CARBON	
	R722	QRD167J-682	6.8K 1/6W CARBON	
	R723	QRD167J-103	10K 1/6W CARBON	
	R726	QRD167J-102	1K 1/6W CARBON	
	R727	QRD167J-183	18K 1/6W CARBON	
	R731	QRD167J-104	100K 1/6W CARBON	
	R732	QRD167J-104	100K 1/6W CARBON	
	R733	QRD167J-394	390K 1/6W CARBON	
	R734	QRD167J-394	390K 1/6W CARBON	
	R735	QRD167J-121	120 1/6W CARBON	
	R736	QRD167J-182	1.8K 1/6W CARBON	
	R737	QRD167J-681	680 1/6W CARBON	
	R738	QRD167J-473	47K 1/6W CARBON	
	R739	QRD167J-331	330 1/6W CARBON	
	R740	QRD167J-183	18K 1/6W CARBON	
	R741	QRD167J-103	10K 1/6W CARBON	
	R742	QRD167J-104	100K 1/6W CARBON	
	R743	QRD167J-474	470K 1/6W CARBON	
	R744	QRD167J-562	5.6K 1/6W CARBON	
	R745	QRD167J-184	180K 1/6W CARBON	
	R746	QRD167J-183	18K 1/6W CARBON	
	R747	QRD167J-473	47K 1/6W CARBON	
	R748	QRD167J-471	470 1/6W CARBON	
	R749	QRD167J-105	1M 1/6W CARBON	
	R750	QRD167J-273	27K 1/6W CARBON	
	R751	QRD167J-394	390K 1/6W CARBON	
	R752	QRD167J-333	33K 1/6W CARBON	
	R753	QRD167J-394	390K 1/6W CARBON	
	R754	QRD167J-102	1K 1/6W CARBON	
	R755	QRD167J-105	1M 1/6W CARBON	
	R756	QRD161J-221	220 1/6W CARBON	
	R757	QRD167J-105	1M 1/6W CARBON	
	R758	QRD167J-105	1M 1/6W CARBON	
	R759	QRD167J-104	100K 1/6W CARBON	
	R760	QRD167J-332	3.3K 1/6W CARBON	
	R761	QRD167J-104	100K 1/6W CARBON	
	R762	QRD167J-682	6.8K 1/6W CARBON	
	R763	QRD167J-562	5.6K 1/6W CARBON	
	R764	QRD167J-183	18K 1/6W CARBON	
	R781	QRD167J-434	430K 1/6W CARBON	
	R782	QRD167J-274	270K 1/6W CARBON	

⚠ : SAFETY PARTS

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R783	QRD167J-203	20K 1/6W CARBON	
	R784	QRD167J-224	220K 1/6W CARBON	
	R785	QRD167J-562	5.6K 1/6W CARBON	
	R786	QRD167J-392	3.9K 1/6W CARBON	
	R788	QRD167J-103	10K 1/6W CARBON	
	R789	QRD167J-102	1K 1/6W CARBON	
	R790	QRD167J-471	470 1/6W CARBON	
	R791	QRD167J-683	68K 1/6W CARBON	
	R792	QRD167J-183	18K 1/6W CARBON	
	R793	QRD167J-183	18K 1/6W CARBON	
	R794	QRD161J-221	220 1/6W CARBON	
	R796	QRD167J-472	4.7K 1/6W CARBON	
	R797	QRD167J-472	4.7K 1/6W CARBON	
	R798	QRD167J-472	4.7K 1/6W CARBON	
⚠	R800	QRZ0077-4R7	4.7 1/4W FUSIBLE	
	R801	QRD167J-474	470K 1/6W CARBON	
	R802	QRD167J-474	470K 1/6W CARBON	
	R803	QRD167J-823	82K 1/6W CARBON	
	R804	QRD161J-221	220 1/6W CARBON	
	R805	QRD167J-683	68K 1/6W CARBON	
	R806	QRD167J-123	12K 1/6W CARBON	
	R807	QRD167J-152	1.5K 1/6W CARBON	
	R808	QRD167J-2R2	2.2 1/6W CARBON	
	R810	QRD167J-684	680K 1/6W CARBON	
	R811	QRD167J-513	51K 1/6W CARBON	
	R812	QRD167J-513	51K 1/6W CARBON	
	R813	QRD167J-683	68K 1/6W CARBON	
	R814	QRD167J-683	68K 1/6W CARBON	
	R815	QRD161J-221	220 1/6W CARBON	
	R821	QRD167J-563	56K 1/6W CARBON	
	R822	QRD167J-563	56K 1/6W CARBON	
	R823	QRD167J-394	390K 1/6W CARBON	
	R824	QRD167J-681	680 1/6W CARBON	
	R825	QVPA601-202A	2K VARIABLE	
	R826	QRD167J-122	1.2K 1/6W CARBON	
	R827	QRD167J-334	330K 1/6W CARBON	
	R828	QRD167J-512	5.1K 1/6W CARBON	
	R829	QVPA601-154A	150K VARIABLE	
	R830	QRD167J-223	22K 1/6W CARBON	
	R831	QRD167J-682	6.8K 1/6W CARBON	
	R832	QRD167J-103	10K 1/6W CARBON	
	R833	QRD167J-562	5.6K 1/6W CARBON	
	R834	QRD167J-562	5.6K 1/6W CARBON	
	R835	QRD167J-562	5.6K 1/6W CARBON	
	R836	QRD167J-562	5.6K 1/6W CARBON	
	R837	QRD167J-183	18K 1/6W CARBON	
	R839	QRD167J-103	10K 1/6W CARBON	
	R840	QRD167J-154	150K 1/6W CARBON	
	R841	QRD167J-103	10K 1/6W CARBON	
	R842	QRD167J-303	30K 1/6W CARBON	
	R843	QRD167J-434	430K 1/6W CARBON	
	R844	QRD167J-434	430K 1/6W CARBON	
	R845	QRD167J-103	10K 1/6W CARBON	
	R846	QRD167J-184	180K 1/6W CARBON	
	R847	QRD167J-104	100K 1/6W CARBON	
	R848	QRD167J-104	100K 1/6W CARBON	
	R849	QRD167J-681	680 1/6W CARBON	
	R850	QRD167J-183	18K 1/6W CARBON	
	R852	QRD167J-102	1K 1/6W CARBON	
	R853	QRD167J-562	5.6K 1/6W CARBON	
	R857	QRD161J-221	220 1/6W CARBON	
	R858	QRD167J-562	5.6K 1/6W CARBON	
	R859	QRD167J-183	18K 1/6W CARBON	
	R861	QRD167J-182	1.8K 1/6W CARBON	
	R862	QRD161J-221	220 1/6W CARBON	
	R863	QRD167J-184	180K 1/6W CARBON	
	R864	QRD167J-393	39K 1/6W CARBON	
	R865	QVPA601-104A	100K VARIABLE	
	R866	QRD167J-224	220K 1/6W CARBON	
	R867	QRD167J-182	1.8K 1/6W CARBON	
	R868	QRD167J-122	1.2K 1/6W CARBON	
	R869	QRD167J-822	8.2K 1/6W CARBON	
	R870	QRD167J-822	8.2K 1/6W CARBON	
	R871	QRD167J-821	820 1/6W CARBON	
	R872	QRD167J-182	1.8K 1/6W CARBON	
	R873	QRD167J-101	100 1/6W CARBON	
	R875	QRD167J-682	6.8K 1/6W CARBON	
	R876	QRD167J-682	6.8K 1/6W CARBON	
	R877	QRD167J-102	1K 1/6W CARBON	
	R879	QRD167J-102	1K 1/6W CARBON	
	R880	QRD167J-102	1K 1/6W CARBON	
	R881	QRD167J-103	10K 1/6W CARBON	
	R882	QRD167J-272	2.7K 1/6W CARBON	
	R883	QRD167J-102	1K 1/6W CARBON	
	R884	QRD167J-271	270 1/6W CARBON	
	R885	QRD167J-103	10K 1/6W CARBON	
	R886	QRD167J-562	5.6K 1/6W CARBON	
	R887	QRD167J-472	4.7K 1/6W CARBON	
	R888	QRD167J-822	8.2K 1/6W CARBON	
	R889	QRD167J-103	10K 1/6W CARBON	
	R891	QRD167J-561	560 1/6W CARBON	
	R892	QRD167J-561	560 1/6W CARBON	
	R893	QRD167J-561	560 1/6W CARBON	
	R894	QRD167J-561	560 1/6W CARBON	
	R895	QRD167J-472	4.7K 1/6W CARBON	

⚠ : SAFETY PARTS

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R896	QRD167J-270	27	1/6W	CARBON	
	R897	QRD167J-181	180	1/6W	CARBON	
	R898	QRD167J-181	180	1/6W	CARBON	
	R899	QRD167J-273	27K	1/6W	CARBON	
	R900	QRD167J-273	27K	1/6W	CARBON	
	R901	QRD167J-273	27K	1/6W	CARBON	
	R902	QRD167J-273	27K	1/6W	CARBON	
	R903	QRD167J-562	5.6K	1/6W	CARBON	
	R904	QRD167J-562	5.6K	1/6W	CARBON	
	R905	QRD167J-822	8.2K	1/6W	CARBON	
	R906	QRD167J-822	8.2K	1/6W	CARBON	
	R907	QRD167J-273	27K	1/6W	CARBON	
	R908	QRD167J-273	27K	1/6W	CARBON	
	R909	QRD167J-561	560	1/6W	CARBON	
	R910	QRD167J-561	560	1/6W	CARBON	
	R911	QRD161J-221	220	1/6W	CARBON	
	R912	QRD161J-221	220	1/6W	CARBON	
	R913	QRD167J-153	15K	1/6W	CARBON	
	R914	QRD167J-153	15K	1/6W	CARBON	
	R925	QRD167J-102	1K	1/6W	CARBON	C
	R926	QRD167J-102	1K	1/6W	CARBON	C
	R927	QRD167J-102	1K	1/6W	CARBON	C
	R941	QRD167J-152	1.5K	1/6W	CARBON	
	R942	QRD167J-512	5.1K	1/6W	CARBON	
	R943	QRD167J-201	200	1/6W	CARBON	
	R945	QRD167J-104	100K	1/6W	CARBON	
	R946	QRD167J-104	100K	1/6W	CARBON	
	R947	QRD167J-392	3.9K	1/6W	CARBON	
	R948	QRD167J-392	3.9K	1/6W	CARBON	
	R949	QRD167J-684	680K	1/6W	CARBON	
	R950	QRD167J-154	150K	1/6W	CARBON	
⚠	R954	QRZ0077-5R6	5.6	1/4W	FUSIBLE	
	R961	QRD167J-680	68	1/6W	CARBON	C
	R962	QRD167J-680	68	1/6W	CARBON	C
	R963	QRD167J-680	68	1/6W	CARBON	C
	R964	QRD167J-680	68	1/6W	CARBON	C
	R965	QRD167J-680	68	1/6W	CARBON	C
	R966	QRD167J-680	68	1/6W	CARBON	C
	R971	QRD167J-220	22	1/6W	CARBON	
	R972	QRD167J-220	22	1/6W	CARBON	
	R973	QRD167J-102	1K	1/6W	CARBON	
	R974	QRD167J-105	1M	1/6W	CARBON	
	R975	QRD167J-331	330	1/6W	CARBON	
	R976	QRD167J-183	18K	1/6W	CARBON	
	R977	QRD167J-102	1K	1/6W	CARBON	
	R978	QRD167J-103	10K	1/6W	CARBON	
	R979	QRD167J-103	10K	1/6W	CARBON	
	R980	QRD167J-104	100K	1/6W	CARBON	
	R981	QRD167J-222	2.2K	1/6W	CARBON	
	R982	QRD167J-910	91	1/6W	CARBON	
	R991	QRD167J-471	470	1/6W	CARBON	
	R992	QRD167J-473	47K	1/6W	CARBON	
	R994	QRD167J-103	10K	1/6W	CARBON	
	R995	QRD167J-472	4.7K	1/6W	CARBON	
	R996	QRD167J-105	1M	1/6W	CARBON	
	R997	QRD167J-473	47K	1/6W	CARBON	
	R999	QRD167J-472	4.7K	1/6W	CARBON	
	RA991	QRB045J-473M	47K	1/8W	R.NETWORK	

⚠ : SAFETY PARTS

OTHERS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E308198-001	FL HOLDER	
		E3400-420	FELT SPACER	
	J701	EMV7141-013M	CONNECTOR**13PIN**	
	P801	EMV7144-015	CONNECTOR**15PIN**	
	P802	EMV5109-006A	PLUG ASSY**6PIN**	
	P803	EMV5109-005A	PLUG ASSY**5PIN**	
	P901	EMV7123-025	CONNECTOR**25PIN**	
	P961	EMV7127-007	CONNECTOR**7PIN**	C
	P991	EMV7123-025R	CONNECTOR**25PIN**	
	S971	ESP0001-018	TACT SWITCH①	
	S972	ESP0001-018	TACT SWITCH③	
	S973	ESP0001-018	TACT SWITCH⑦	
	S974	ESP0001-018	TACT SWITCH⑨	
	S975	ESP0001-018	TACT SWITCH④	
	S976	ESP0001-018	TACT SWITCH②	
	S977	ESP0001-018	TACT SWITCH⑤	
	S978	ESP0001-018	TACT SWITCH⑩	
	S979	ESP0001-018	TACT SWITCH⑥	
	S980	ESP0001-018	TACT SWITCH⑧	
	S981	ESP0001-018	TACT SWITCH**PROGRAM**	
	S982	ESP0001-018	TACT SWITCH⏮	
	S983	ESP0001-018	TACT SWITCH**EDIT MODE**	
	S984	ESP0001-018	TACT SWITCH⏭	
	S985	ESP0001-018	TACT SWITCH**SIDE A/B**	
	S986	ESP0001-018	TACT SWITCH**TIME**	
	S987	ESP0001-018	TACT SWITCH**FADE MODE**	
	S988	ESP0001-018	TACT SWITCH**REPEAT ALL/1**	
	S989	ESP0001-018	TACT SWITCH**RANDOM**	
	S990	ESP0001-018	TACT SWITCH**DISPLAY**	
	S991	ESP0001-018	TACT SWITCH **+10**	
	S992	ESP0001-018	TACT SWITCH**PLAY/PAUSE**	
	S993	ESP0001-018	TACT SWITCH**OPEN/CLOSE**	
	S994	ESP0001-018	TACT SWITCH**CANCEL**	
	S995	ESP0001-018	TACT SWITCH**STOP/CLEAR**	
	X841	ECX0169-344EA	RESONATOR	
	CF991	ECX0004-194KM	RESONATOR	
⚠	CP701	ICP-N5	I.C. PROTECTOR	
	EP701	E70859-001	EARTH PLATE	
	EP702	E70859-001	EARTH PLATE	
	EP703	E70859-001	EARTH PLATE	
	EP704	E70859-001	EARTH PLATE	
	FL991	ELU0001-140	FL TUBE	

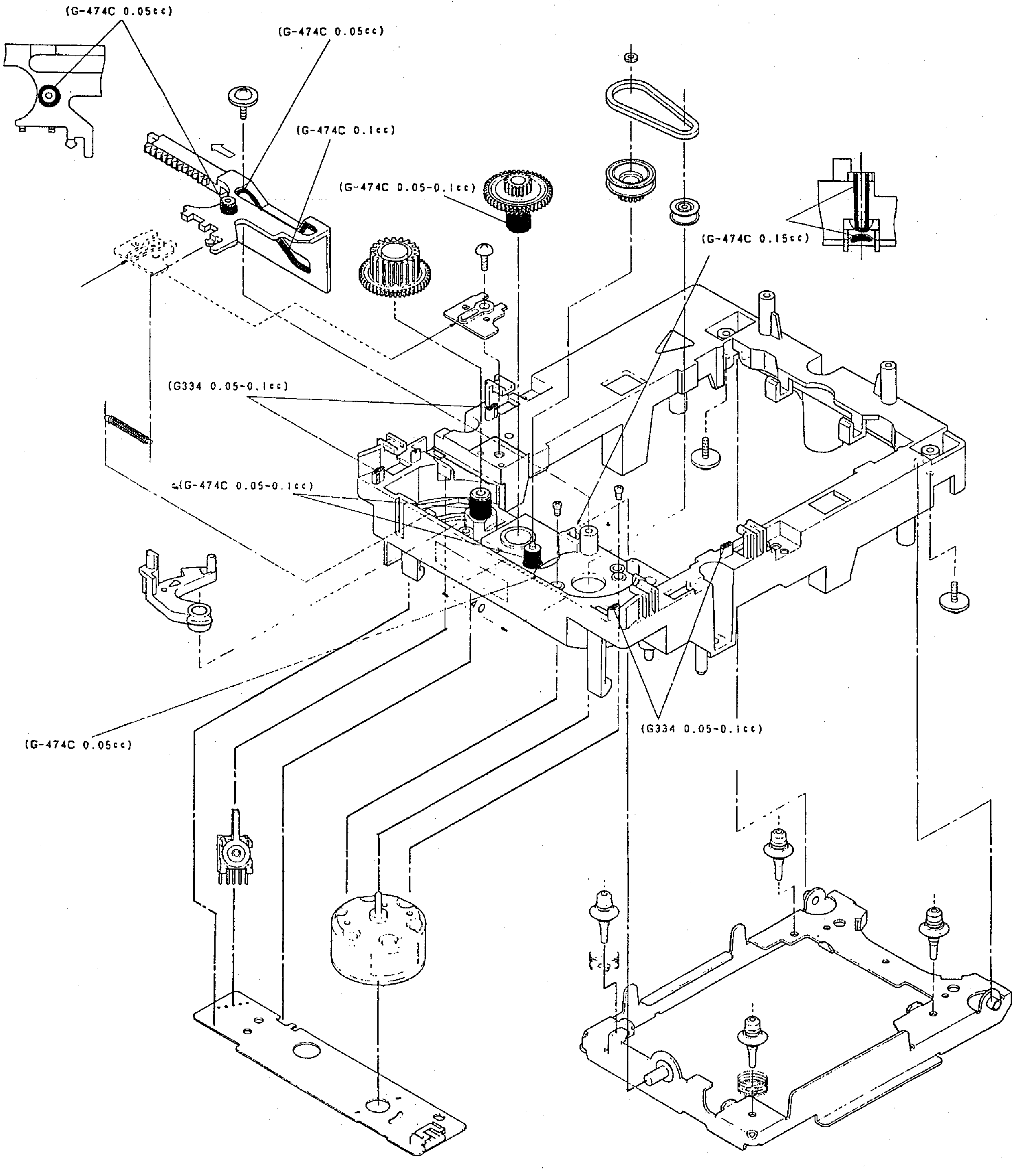
⚠ : SAFETY PARTS

Exploded View of Assemblies and Application Points for Grease

Grease used

■ G-334 (Shin-Etsu Chemical Co., Ltd.)

■ G-474C (Kanto Chemical Co., Ltd.)


(G-474C 0.05cc)
(G-474C 0.05cc)
(G-474C 0.1cc)
(G-474C 0.05-0.1cc)
(G-474C 0.15cc)
(G334 0.05~0.1cc)
(G-474C 0.05~0.1cc)
(G-474C 0.05cc)
(G334 0.05~0.1cc)

Grease part numbers

G-334: EBS0006-009B

G-474C: EBS0006-019B

JVC-00804

SE-MXG7BK

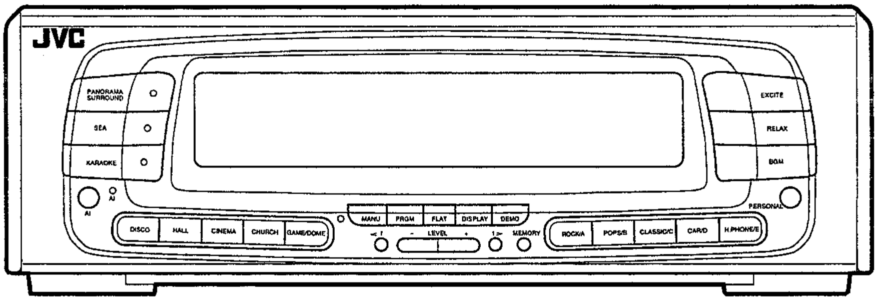
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

CA-MXG7BK/XT-MXG7BK

(Unit No. SE-MXG7BK)


JVC
PANORAMA SURROUND
SEA
KARAOKE
AI
AI
DISCO
HALL
CINEMA
CHURCH
GAME/DOME
MANU
PRGM
FLAT
DISPLAY
DEMO
LEVEL
MEMORY
ROCK/A
POPS/B
CLASSIC/C
CAR/D
H.PHONE/E
EXCITE
RELAX
BGM
PERSONAL

* For the instruction manual and the packing, please refer to the manual of RX-MXG7BK (No.20393).
* RX-MXG7BK is needed (for power supply etc.) when servicing.

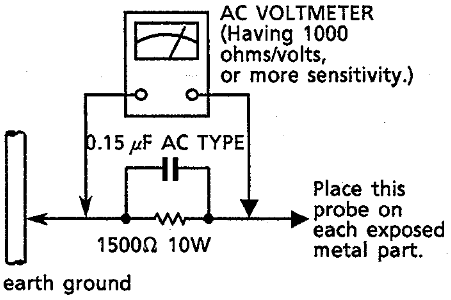
Contents

Safety Precautions 1-2
Block Diagram 1-3
Description of ICs 1-4
Internal Connection of FL Display 1-8
Disassembly Procedures 1-10
Schematic Diagrams .... Insertion
Printed Circuit Board .... Insertion
Parts List ..... Separate-volume Insertion

No. 20394
Feb. 1993

Safety Precautions

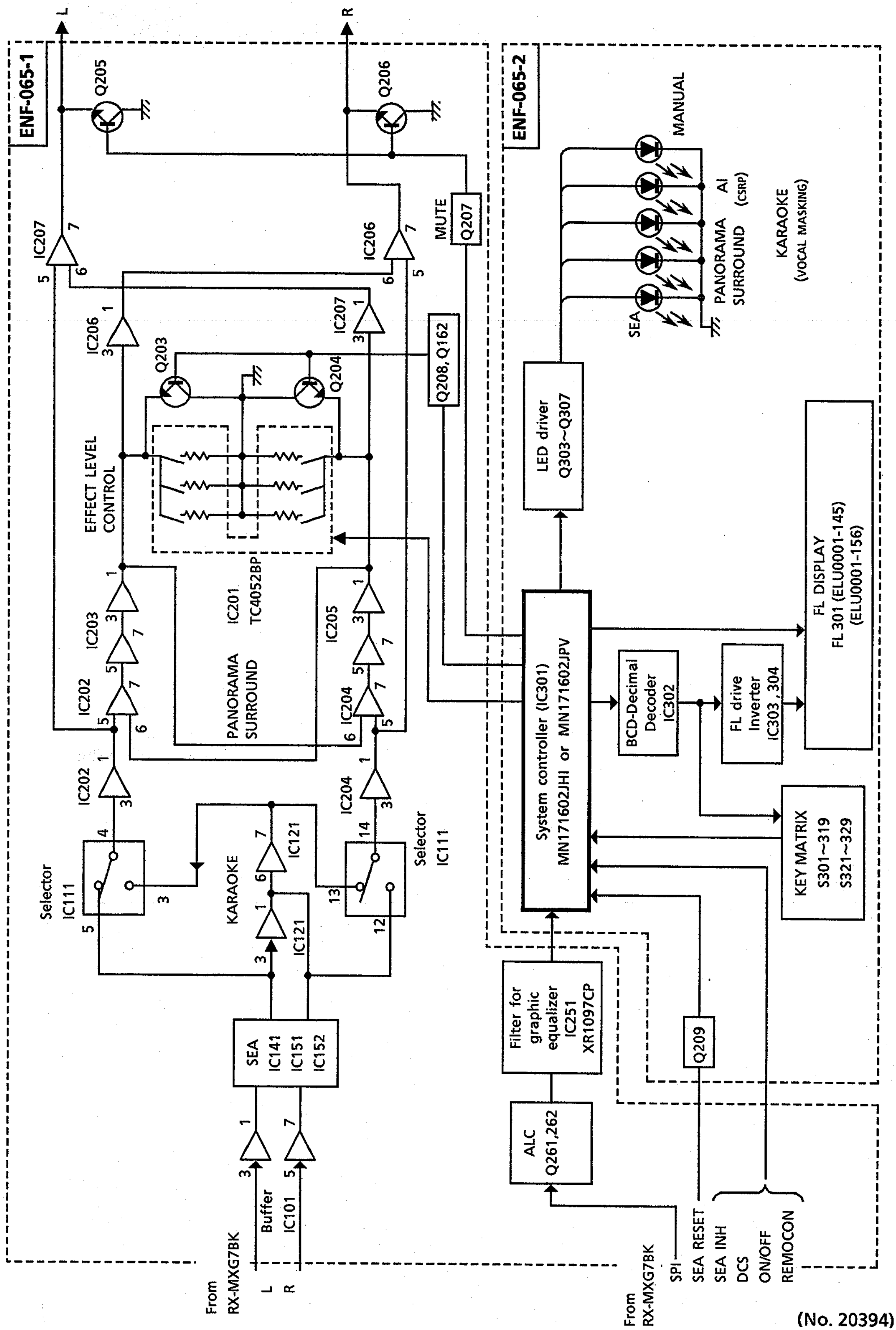
1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Block Diagram

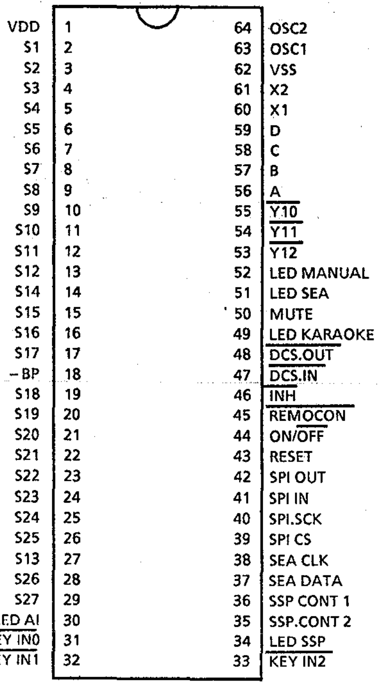

ENF-065-1
ENF-065-2
L
R
Q205
Q206
IC207
IC206
MUTE
Q207
Q208, Q162
Q203
Q204
EFFECT LEVEL CONTROL
IC201
TC4052BP
PANORAMA SURROUND
IC203
IC205
IC202
IC204
Selector
IC111
KARAOKE
IC121
SEA
IC141
IC151
IC152
Buffer
IC101
From RX-MXG7BK
MANUAL
AI (CSRP)
PANORAMA SURROUND
KARAOKE (VOCAL MASKING)
SEA
LED driver
Q303~Q307
FL DISPLAY
FL 301 (ELU0001-145)
(ELU0001-156)
System controller (IC301)
MN171602JHI or MN171602JPV
BCD-Decimal Decoder
IC302
FL drive Inverter
IC303, 304
KEY MATRIX
S301~319
S321~329
Filter for graphic equalizer
IC251
XR1097CP
ALC
Q261,262
Q209
SPI
SEA RESET
SEA INH
DCS
ON/OFF
REMOCON
1
2
3
4
5
6
7
12
13
14

Description of ICs

■MN171602JHI (IC301) : System controller

MN171602JPV is for universal and Taiwan versions, and the same layout as MN171602JHI.

1.Terminal Layout



VDD	1	64	OSC2
S1	2	63	OSC1
S2	3	62	VSS
S3	4	61	X2
S4	5	60	X1
S5	6	59	D
S6	7	58	C
S7	8	57	B
S8	9	56	A
S9	10	55	$\overline{\text{Y10}}$
S10	11	54	$\overline{\text{Y11}}$
S11	12	53	$\overline{\text{Y12}}$
S12	13	52	LED MANUAL
S14	14	51	LED SEA
S15	15	50	MUTE
S16	16	49	$\overline{\text{LED KARAOKE}}$
S17	17	48	$\overline{\text{DCS.OUT}}$
−BP	18	47	$\overline{\text{DCS.IN}}$
S18	19	46	$\overline{\text{INH}}$
S19	20	45	$\overline{\text{REMOCON}}$
S20	21	44	$\overline{\text{ON/OFF}}$
S21	22	43	RESET
S22	23	42	SPI OUT
S23	24	41	SPI IN
S24	25	40	SPI.SCK
S25	26	39	SPI CS
S13	27	38	SEA CLK
S26	28	37	SEA DATA
S27	29	36	SSP CONT 1
$\overline{\text{LED AI}}$	30	35	SSP.CONT 2
$\overline{\text{KEY IN0}}$	31	34	$\overline{\text{LED SSP}}$
$\overline{\text{KEY IN1}}$	32	33	$\overline{\text{KEY IN2}}$

2.Key matrix

	KEY IN0	KEY IN1	KEY IN2
$\overline{\text{Y0}}$	–	MANU	–
$\overline{\text{Y1}}$	AI	PROG	PERSONAL
$\overline{\text{Y2}}$	KARAOKE	FLAT	BGM
$\overline{\text{Y3}}$	SEA	DISPLAY	RELAX
$\overline{\text{Y4}}$	SURROUND	DEMO	EXCITE
$\overline{\text{Y5}}$	GAME	<f	ROCK/A
$\overline{\text{Y6}}$	CHURCH	LEVEL −	POPS/B
$\overline{\text{Y7}}$	CINEMA	LEVEL +	CLASSIC/C
$\overline{\text{Y8}}$	HALL	f>	CAR/D
$\overline{\text{Y9}}$	DISCO	MEMORY	H.PHONE/E

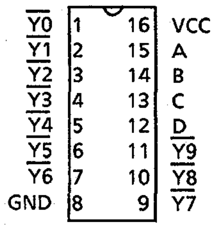
$\overline{\text{Y0}}$~$\overline{\text{Y9}}$ are the outputs of the shift register IC302.

3.Terminal Description

Pin NO.	Symbol	I/O	Function	Pin NO.	Symbol	I/O	Function
1	VDD	--	Power supply	33	KEY IN2	I	Key matrix input
2	S1	O	Segment control	34	LED SSP	O	Indication control for 'PANORAMA'
3	S2	O	Segment control	35	SSP CONT2	O	Control for 'PANORAMA SURROUND'
4	S3	O	Segment control	36	SSP CONT1	O	Control for 'PANORAMA SURROUND'
5	S4	O	Segment control	37	SEA DATA	O	Data for sea
6	S5	O	Segment control	38	SEA CLK	O	Clock for data transmission
7	S6	O	Segment control	39	SPI CS	O	Chip select signal
8	S7	O	Segment control	40	SPI SCK	O	Clock for data transmission to ic251
9	S8	O	Segment control	41	SPI IN	I	SPI data from ic251
10	S9	O	Segment control	42	SPI OUT	O	Control data for ic251
11	S10	O	Segment control	43	RESET	I	Reset signal
12	S11	O	Segment control	44	ON/OFF	I	H : power on
13	S12	O	Segment control	45	REMOCON	I	Remote control signal input
14	S14	O	Segment control	46	INH	I	Inhibit signal input
15	S15	O	Segment control	47	DCS.IN	I	Compulink signal input
16	S16	O	Segment control	48	DCS.OUT	O	Compulink signal output
17	S17	O	Segment control	49	LED KARA.	O	Indication control for 'KARAOKE'
18	−BP	--	Power supply for fl display	50	MUTE	O	H : Source direct on
19	S18	O	Segment control	51	LED SEA	O	Indication control for 'SEA'
20	S19	O	Segment control	52	LED MANUAL	O	Indication control for 'MANUAL'
21	S20	O	Segment control	53	Y12	O	Indication control for fl display
22	S21	O	Segment control	54	Y11	O	Indication control for fl display
23	S22	O	Segment control	55	Y10	O	Indication control for fl display
24	S23	O	Segment control	56	A	O	Grid control/Key matrix output
25	S24	O	Segment control	57	B	O	Grid control/Key matrix output
26	S25	O	Segment control	58	C	O	Grid control/Key matrix output
27	S13	O	Segment control	59	D	O	Grid control/Key matrix output
28	S26	O	Segment control	60	X1	--	Connected to GND
29	S27	O	Segment control	61	X2	--	Non connection
30	LED AI	O	Indication control for 'AI'	62	VSS	--	GND
31	KEY IN0	I	Key matrix input	63	OSC1	--	Oscillation terminal
32	KEY IN1	I	Key matrix input	64	OSC2	--	Oscillation terminal

■TC74HC42AP(IC302): BCD-Decimal code decoder

1.Terminal Layout

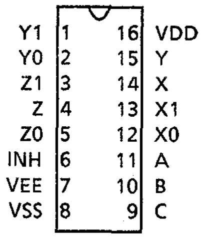

$\overline{Y0}$ 1
$\overline{Y1}$ 2
$\overline{Y2}$ 3
$\overline{Y3}$ 4
$\overline{Y4}$ 5
$\overline{Y5}$ 6
$\overline{Y6}$ 7
GND 8
16 VCC
15 A
14 B
13 C
12 D
11 $\overline{Y9}$
10 $\overline{Y8}$
9 $\overline{Y7}$

2.Function Table

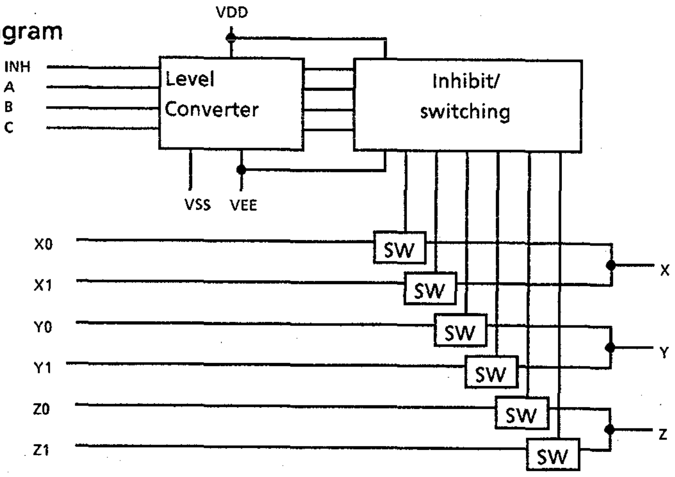
Code	BCD input				Decimal code output									
NO	D	C	B	A	$\overline{Y0}$	$\overline{Y1}$	$\overline{Y2}$	$\overline{Y3}$	$\overline{Y4}$	$\overline{Y5}$	$\overline{Y6}$	$\overline{Y7}$	$\overline{Y8}$	$\overline{Y9}$
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H
7	L	H	H	H	H	H	H	H	H	H	H	L	H	H
8	H	L	L	L	H	H	H	H	H	H	H	H	L	H
9	H	L	L	H	H	H	H	H	H	H	H	H	H	L
—	H	×	H	×	H	H	H	H	H	H	H	H	H	H
—	H	H	×	×	H	H	H	H	H	H	H	H	H	H

■BU4053B(IC111): 2CH -Multiplexer

1.Terminal Layout


Y1 1
Y0 2
Z1 3
Z 4
Z0 5
INH 6
VEE 7
VSS 8
16 VDD
15 Y
14 X
13 X1
12 X0
11 A
10 B
9 C

2.Internal Block Diagram

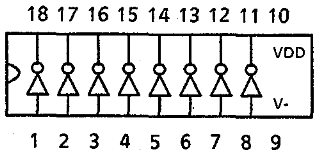

VDD
INH
A
B
C
Level Converter
Inhibit/ switching
VSS
VEE
X0
X1
Y0
Y1
Z0
Z1
SW
X
Y
Z

3.Function Table

Control input				ON channel
INH	C	B	A	
L	L	L	L	Z0, Y0, X0
L	L	L	H	Z0, Y0, X1
L	L	H	L	Z0, Y1, X0
L	L	H	H	Z0, Y1, X1
L	H	L	L	Z1, Y0, X0
L	H	L	H	Z1, Y0, X1
L	H	H	L	Z1, Y1, X0
L	H	H	H	Z1, Y1, X1
H	×	×	×	NONE

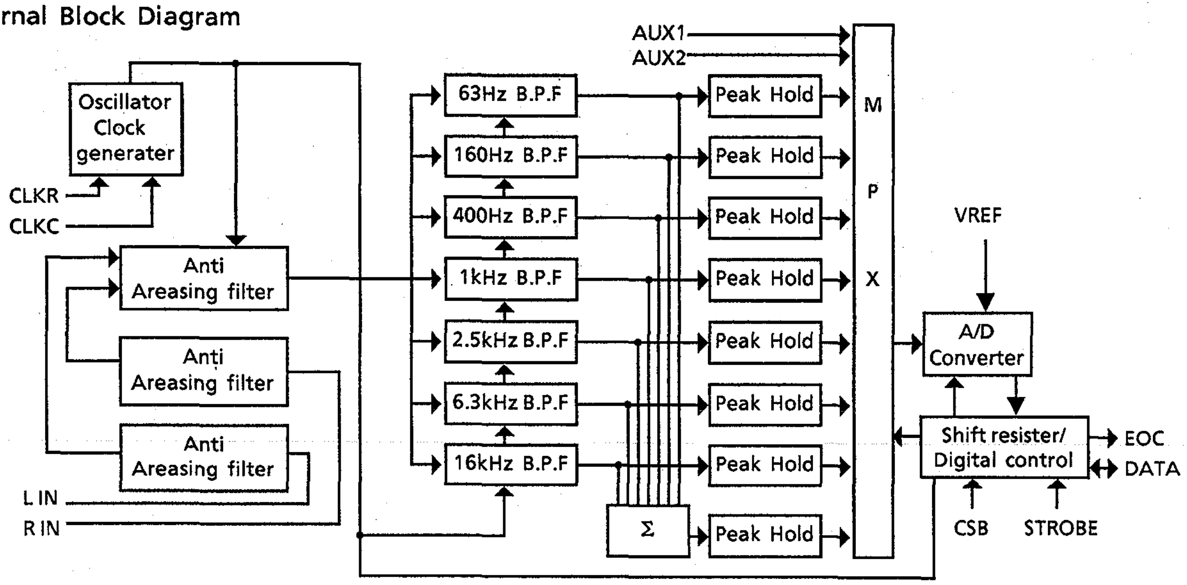
■AN6873N(IC303, 304): Inverter for FL drive

Terminal Layout

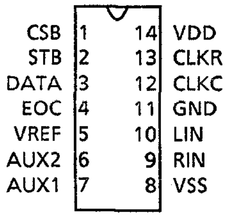

18 17 16 15 14 13 12 11 10
VDD
V-
1 2 3 4 5 6 7 8 9

■XR1097CP (IC251) : 7-channel graphic equalizer filter with A/D converter

1.Internal Block Diagram


AUX1
AUX2
Oscillator Clock generater
CLKR
CLKC
Anti Areasing filter
Anti Areasing filter
Anti Areasing filter
L IN
R IN
63Hz B.P.F
160Hz B.P.F
400Hz B.P.F
1kHz B.P.F
2.5kHz B.P.F
6.3kHz B.P.F
16kHz B.P.F
Σ
Peak Hold
Peak Hold
Peak Hold
Peak Hold
Peak Hold
Peak Hold
Peak Hold
Peak Hold
M
P
X
VREF
A/D Converter
Shift resister/ Digital control
EOC
DATA
CSB
STROBE

2.Terminal Layout

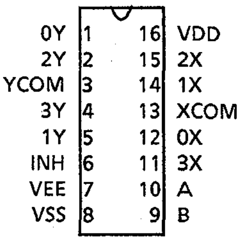

CSB 1
STB 2
DATA 3
EOC 4
VREF 5
AUX2 6
AUX1 7
14 VDD
13 CLKR
12 CLKC
11 GND
10 LIN
9 RIN
8 VSS

3.Terminal Description

Pin No	Symbol	I/O	Function	Pin No	Symbol	I/O	Function
1	CSB	I	Chip select	8	VSS	--	– 5V
2	STB	I	Strobe signal	19	RIN	I	Sound signal input
3	DATA	I/O	Data input / output	10	LIN	I	Non connection
4	EOC	--	Not used	11	GND	--	GND
5	VREF	I	A/D converter reference voltage	12	CLKC	--	A capacitor is connected
6	AUX2	I	Non connection	13	CLKR	--	A resister is connected
7	AUX1	I	Non connection	14	VDD	--	+ 5V

■TC4052BP(IC201) : Multiplexer

1.Terminal Layout

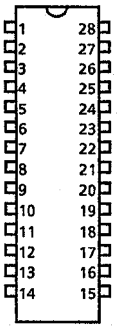

0Y 1
2Y 2
YCOM 3
3Y 4
1Y 5
INH 6
VEE 7
VSS 8
16 VDD
15 2X
14 1X
13 XCOM
12 0X
11 3X
10 A
9 B

2.Function Table

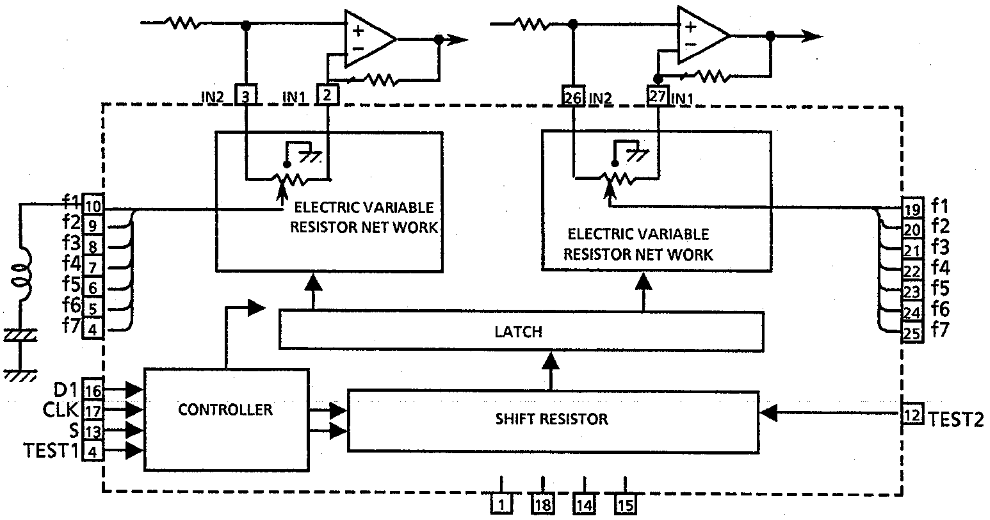
Control input			ON channel
INH	B	A	
L	L	L	0X, 0Y
L	L	H	1X, 1Y
L	H	L	2X, 2Y
L	H	H	3X, 3Y
H	--	--	NONE

■ LC7522 (IC141) : Variable Resistor for SEA Control

1. Terminal Layout


1
2
3
4
5
6
7
8
9
10
11
12
13
14
28
27
26
25
24
23
22
21
20
19
18
17
16
15

2. Internal Block Diagram

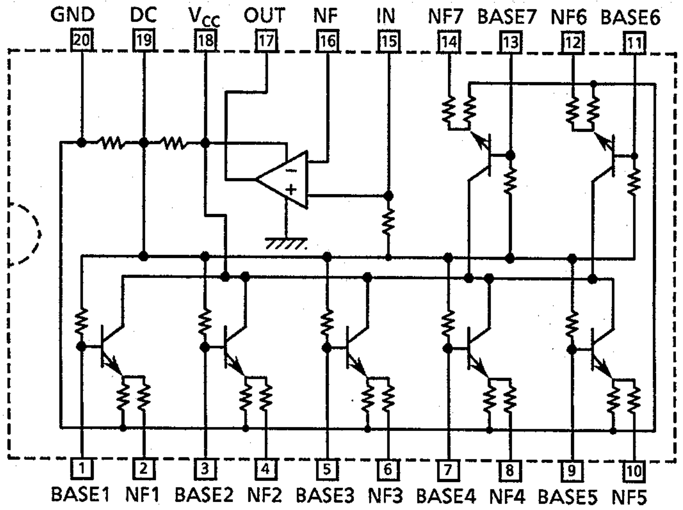

IN2
3
IN1
2
26
IN2
27
IN1
ELECTRIC VARIABLE RESISTOR NET WORK
ELECTRIC VARIABLE RESISTOR NET WORK
f1 10
f2 9
f3 8
f4 7
f5 6
f6 5
f7 4
19 f1
20 f2
21 f3
22 f4
23 f5
24 f6
25 f7
LATCH
D1 16
CLK 17
S 13
TEST1 4
CONTROLLER
SHIFT RESISTOR
12 TEST2
1
18
14
15

3. Terminal Description

Pin No.	Pin Name	Functions
1 18 14 15	V_{DD} VSS VEE VCC	Power supply +7V for audio signal Ground. Power supply −7V for audio signal. Power supply +5V
2,27 3, 26	IN 1 IN 2	Audio signal input The inversion signal of the operational amplifier inputs to IN 1 normally. The non-inversion signal of the operational amplifier inputs to IN 2 normally.
16	SDA	Data input from the CPU. Schmitt inverter type
17	SCK	Clock signal input from the CPU. Schmitt inverter type
4~10 19~25	f1~f7	For connecting to band-pass filter. f1~f7x2 (Left and Right)
11 12	TEST 1 TEST 2	Not used Not used
13	S	Chip Select
28	NC	Not used

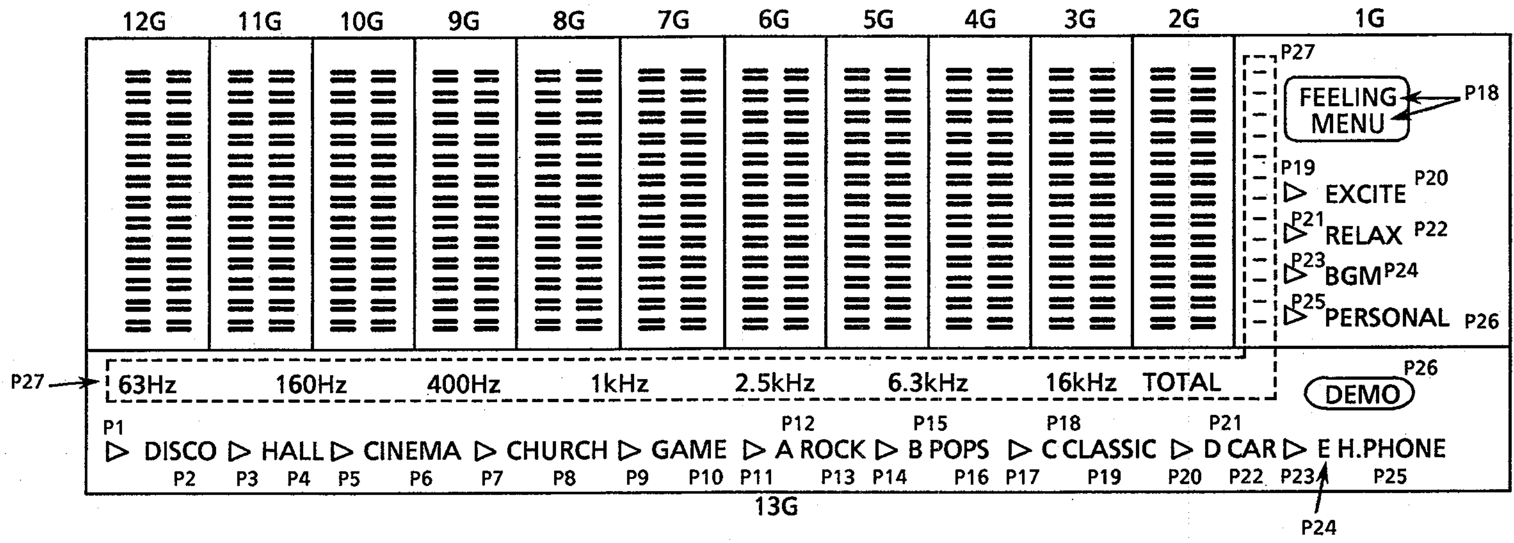
■ LA3607S (IC151,152) :S.E.A. Graphic Equalizer

It makes inductive characteristic instead of coil.


GND
20
DC
19
V_{CC}
18
OUT
17
NF
16
IN
15
NF7
14
BASE7
13
NF6
12
BASE6
11
1
BASE1
2
NF1
3
BASE2
4
NF2
5
BASE3
6
NF3
7
BASE4
8
NF4
9
BASE5
10
NF5

Internal Connection of FL Display

■ FL301 : ELU0001-145 (For Universal and Taiwan versions)


12G
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
P27
FEELING MENU
P18
P19
EXCITE
P20
P21
RELAX
P22
P23
BGM
P24
P25
PERSONAL
P26
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
DEMO
P26
P1
DISCO
P2
HALL
P3
P4
CINEMA
P5
P6
CHURCH
P7
P8
GAME
P9
P10
P11
P12
A ROCK
P13
P14
P15
B POPS
P16
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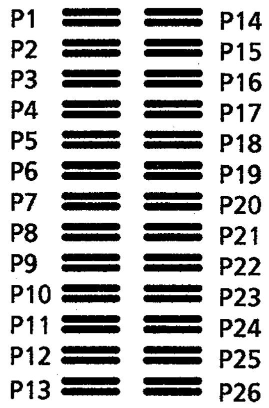
C CLASSIC
P19
P20
P21
D CAR
P22
P23
E H.PHONE
P25
P24
13G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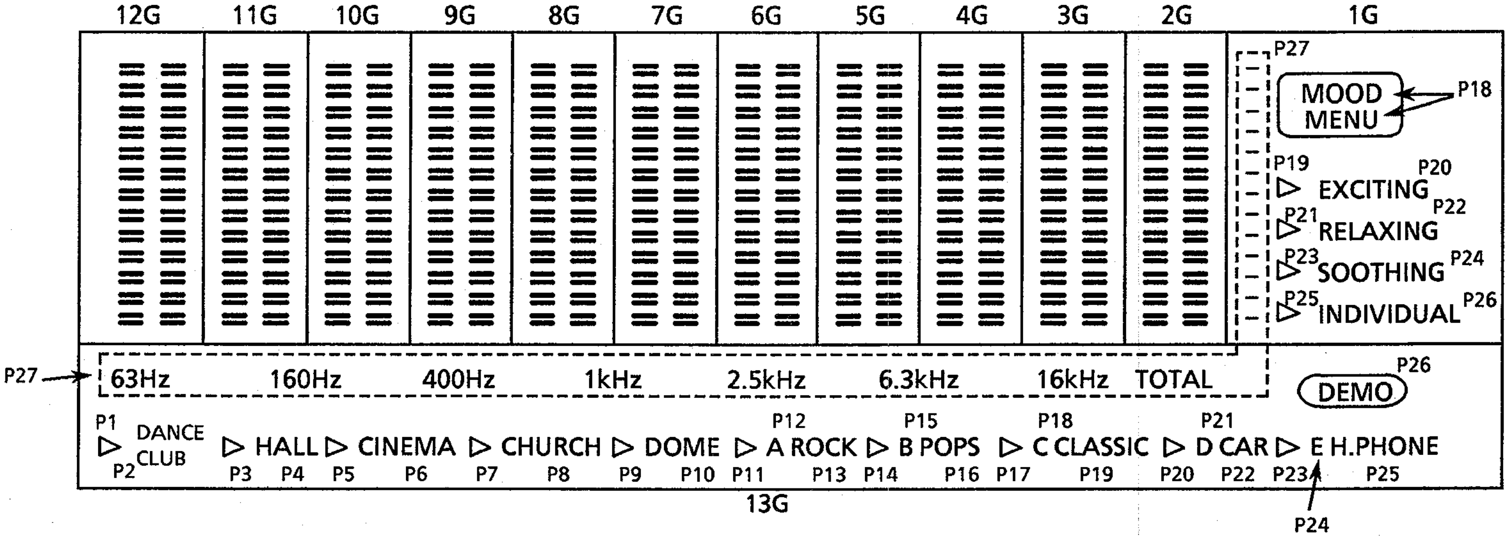
P25
P26

Terminal connection

Terminal No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Electrode	F1	F1	F1	NP	12G	11G	10G	9G	8G	7G	6G	NP	NP	5G	4G	3G	2G	1G	13G	
Terminal No	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Electrode	NP	NP	NP	NP	NP	NP	NP	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
Terminal No			40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
Electrode			P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22	P 23	P 24	P 25	P 26	P 27	NP	F2	F2	F2

Notes F : Filament G : Grid P : Anode NP : No Pin

■ FL301 : ELU0001-156 (Except Universal and Taiwan versions)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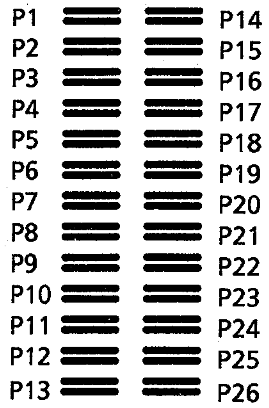
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
P27
MOOD MENU
P18
P19 ▷ EXCITING P20
P21 ▷ RELAXING P22
P23 ▷ SOOTHING P24
P25 ▷ INDIVIDUAL P26
DEMO P26
P27
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
P1 ▷ DANCE CLUB P2
▷ HALL P3 P4
▷ CINEMA P5 P6
▷ CHURCH P7 P8
▷ DOME P9 P10
▷ A ROCK P11 P12 P13
▷ B POPS P14 P15 P16
▷ C CLASSIC P17 P18 P19
▷ D CAR P20 P21 P22
▷ E H.PHONE P23 P24 P25
13G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P16
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P23
P24
P25
P26

Terminal connection

Terminal No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Electrode	F1	F1	F1	NP	12G	11G	10G	9G	8G	7G	6G	NP	NP	5G	4G	3G	2G	1G	13G	
Terminal No	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Electrode	NP	NP	NP	NP	NP	NP	NP	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
Terminal No			40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
Electrode			P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22	P 23	P 24	P 25	P 26	P 27	NP	F2	F2	F2

Notes F : Filament G : Grid P : Anode NP : No Pin

Disassembly Procedures

■ Removing the metal cover

1. Remove the 2 screws Ⓐ fastening the both sides of the metal cover and 4 screws Ⓑ fixing the back of the cover to remove the cover.

■ Removing the front panel assembly

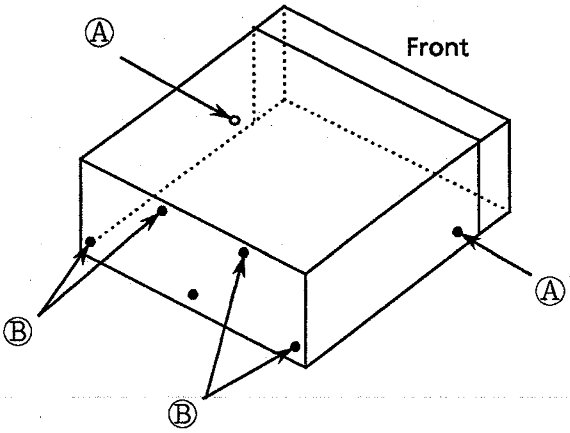
1. Remove the metal cover.
2. Remove the screw Ⓓ and release the 3 hooks to remove the assembly. (If necessary, disconnect the connectors.)

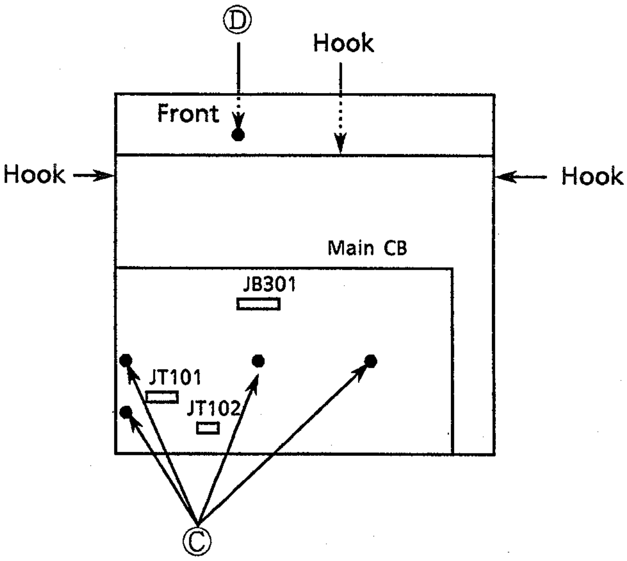
■ Removing the main circuit board

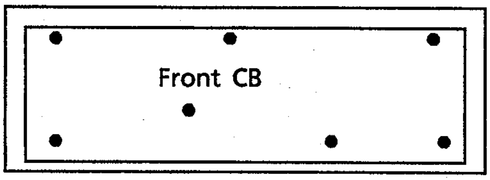
1. Disconnect the connectors JT101, JT102 and JB301.
2. Remove the 4 screws Ⓒ to remove the circuit board.

■ Removing the front circuit board

1. Remove the front panel assembly.
2. Remove the 7 screws fixng the circuit board to remove the circuit board.





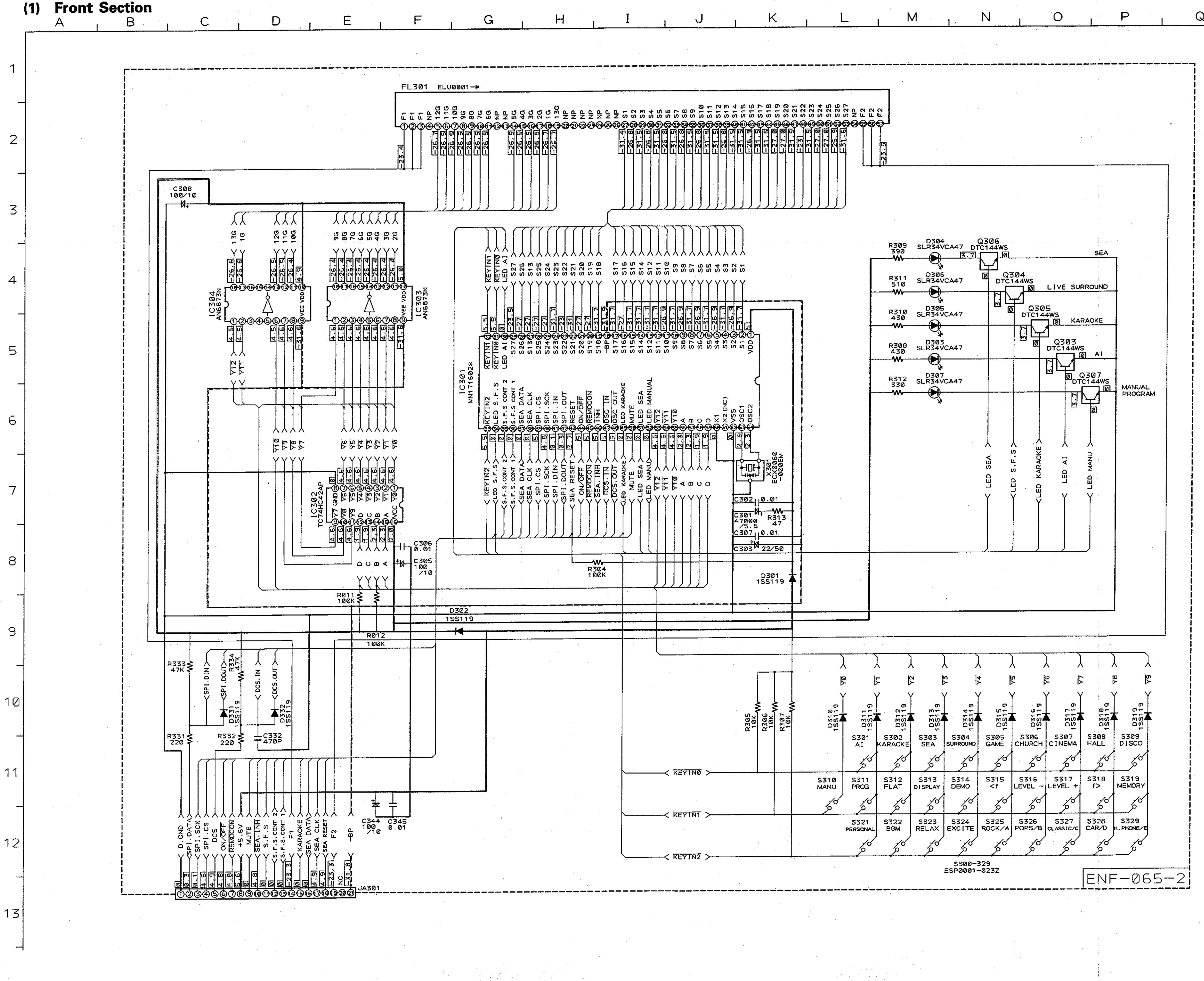


Front panel assembly

804

Schematic Diagrams

(1) Front Section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13
FL301 ELU0001-*
C308 100/10
IC304 AN6673N
IC303 AN6673N
IC301 MN171602*
IC302 TC74HC42AP
X301 ECX0060 -000EM
C302 0.01
C301 47000 /5.5
R313 47
C307 0.01
C303 22/50
C306 0.01
C305 100 /10
R304 100K
D301 1SS119
R011 100K
D302 1SS119
R012 100K
R333 47K
R334 47K
D331 1SS119
D332 1SS119
R331 220
R332 220
C332 470P
C344 100 /10
C345 0.01
JA301
R309 390
D304 SLR34VCA47
Q306 DTC144WS
SEA
R311 510
D306 SLR34VCA47
Q304 DTC144WS
LIVE SURROUND
R310 430
D305 SLR34VCA47
Q305 DTC144WS
KARAOKE
R308 430
D303 SLR34VCA47
Q303 DTC144WS
AI
R312 330
D307 SLR34VCA47
Q307 DTC144WS
MANUAL PROGRAM
LED SEA
LED S.F.S
LED KARAOKE
LED AI
LED MANU
R305 10K
R306 10K
R307 10K
KEYIN0
KEYIN1
KEYIN2
D310 1SS119
D311 1SS119
D312 1SS119
D313 1SS119
D314 1SS119
D315 1SS119
D316 1SS119
D317 1SS119
D318 1SS119
D319 1SS119
S301 AI
S302 KARAOKE
S303 SEA
S304 SURROUND
S305 GAME
S306 CHURCH
S307 CINEMA
S308 HALL
S309 DISCO
S310 MANU
S311 PROG
S312 FLAT
S313 DISPLAY
S314 DEMO
S315 <f
S316 LEVEL −
S317 LEVEL +
S318 f>
S319 MEMORY
S321 PERSONAL
S322 BGM
S323 RELAX
S324 EXCITE
S325 ROCK/A
S326 POPS/B
S327 CLASSIC/C
S328 CAR/D
S329 H.PHONE/E
S300-329 ESP0001-023Z
ENF-065-2
D.GND
SPI.DATA
SPI.SCK
SPI.CS
DCS
ON/OFF
REMOCON
+5.6V
SEA.INH
MUTE
S.F.S
S.F.S.CONT 2
S.F.S.CONT 1
F1
KARAOKE
SEA CLK
SEA RESET
F2
NC
-BP

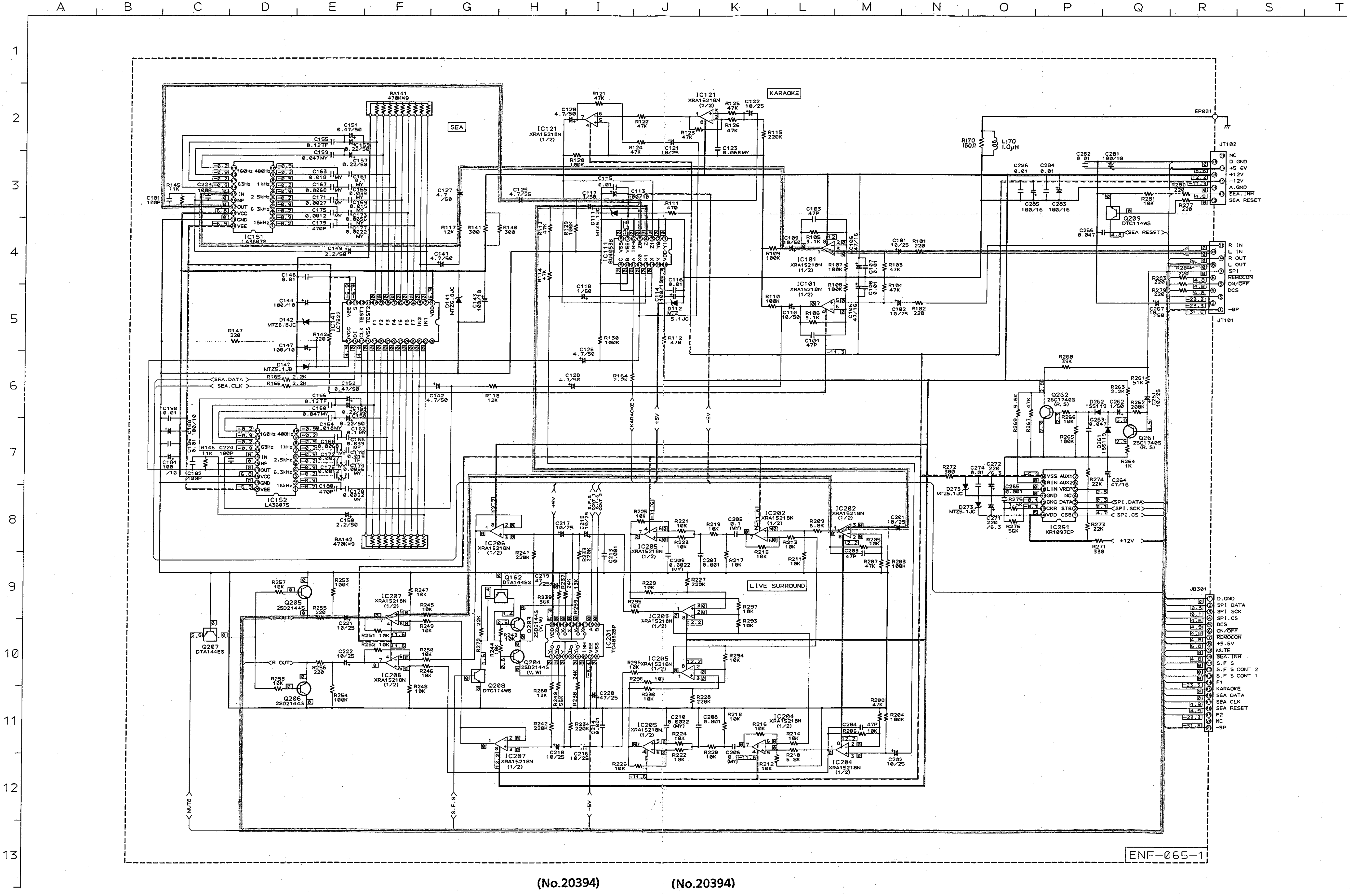
* MARK

VERSION	Universal, Taiwan	Except Universal, Taiwan
IC301	MN171602JPV	MN171602JHI
FL301	ELU0001-145	ELU0001-156

Notes:

1. ——— indicates +B power supply.
2. - - - - - indicates −B power supply.
3. ▨ indicates main signal path.
4. When replacing the parts in the shaded area (▨) and those marked with ⚠, be sure to use the designated parts to ensure safety.
   This is the standard circuit diagram.
5. The design and contents are subject to change without notice.

(2) Signal Processing Section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11
12
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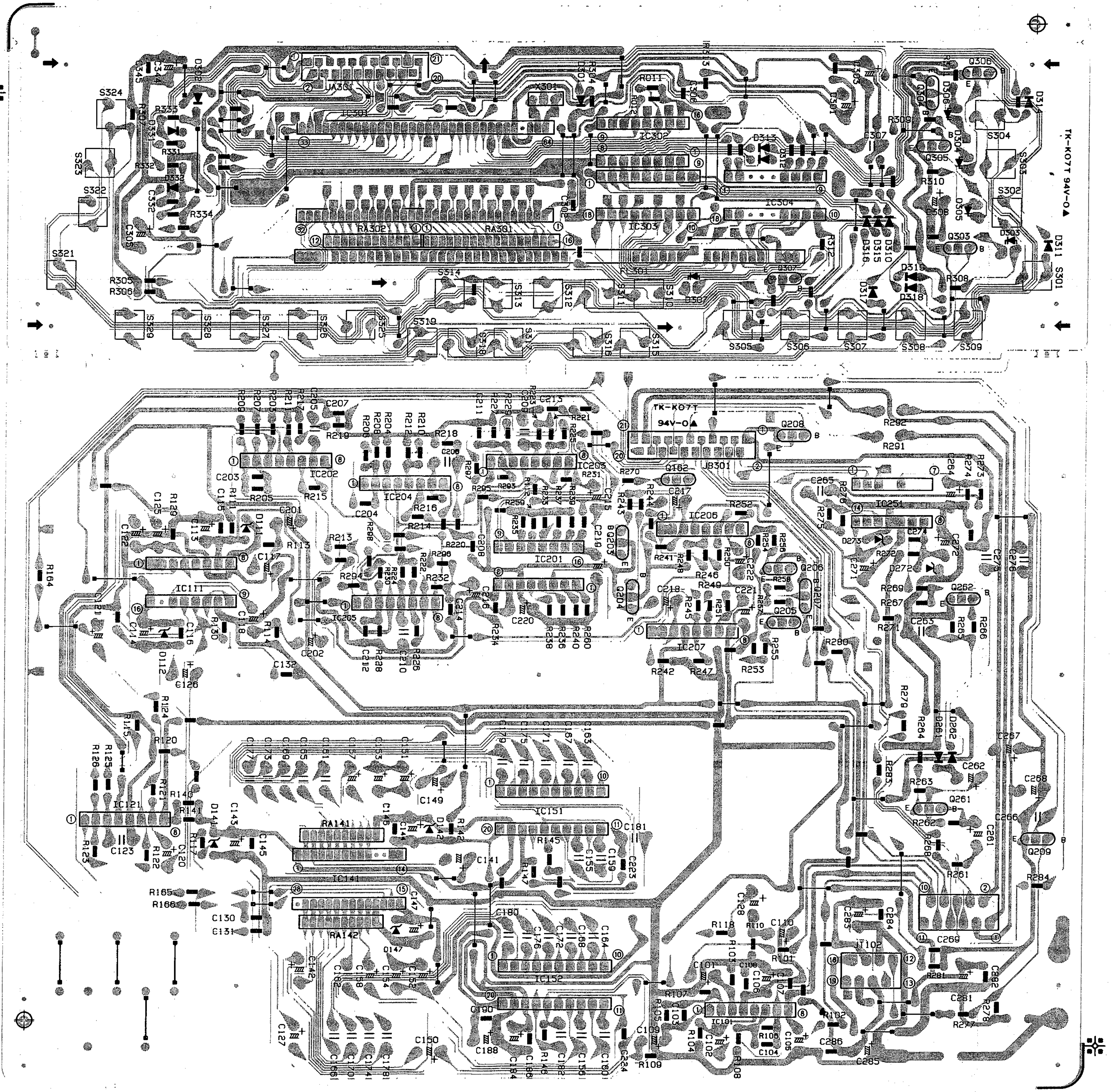
SEA
RA141 470K×9
IC151 LA3607S
IC152 LA3607S
RA142 470K×9
IC141 LC7522
D141 MTZ6.8JC
D142 MTZ6.8JC
D147 MTZ5.1JB
<SEA.DATA
<SEA.CLK
KARAOKE
IC121 XRA15218N (1/2)
IC111 BU4053B
D111 MTZ5.1JC
D112 MTZ5.1JC
IC101 XRA15218N (1/2)
R170 150Ω
L170 1.0μH
EP001
JT102
NC
D GND
+5 6V
+12V
-12V
A.GND
SEA.INH
SEA RESET
Q209 DTC114WS
<SEA RESET>
JT101
R IN
L IN
R OUT
L OUT
SPI
REMOCON
ON/OFF
DCS
-BP
Q262 2SC1740S (R, S)
Q261 2SC1740S (R, S)
D262 1SS119
D261 1SS119
D273 MTZ5.1JC
IC251 XR1097CP
<SPI.DATA>
<SPI.SCK>
<SPI.CS>
+12V
<KARAOKE>
<+5V>
<-5V>
IC206 XRA15218N (1/2)
IC205 XRA15218N (1/2)
IC202 XRA15218N (1/2)
LIVE SURROUND
Q162 DTA144ES
Q203 2SD2144S (V, W)
Q204 2SD2144S (V, W)
Q208 DTC114WS
IC201 TC4052BP
IC203 XRA15218N (1/2)
IC207 XRA15218N (1/2)
IC204 XRA15218N (1/2)
Q205 2SD2144S
Q206 2SD2144S
Q207 DTA144ES
<L OUT>
<R OUT>
MUTE
S.F.S
-5V
JB301
D.GND
SPI DATA
SPI SCK
SPI.CS
DCS
ON/OFF
REMOCON
+5.6V
MUTE
SEA INH
S.F S
S.F S CONT 2
S.F S CONT 1
F1
KARAOKE
SEA DATA
SEA CLK
SEA RESET
F2
NC
-BP
ENF-065-1

Printed Circuit Board

■ Main & Front CB (ENF-065)


TK-K07T 94V-0
TK-K07T
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IC301
IC302
IC303
IC304
RA301
RA302
FL301
JA301
JB301
X301
IC111
IC121
IC141
IC151
IC152
IC101
IC201
IC202
IC203
IC204
IC205
IC206
IC207
IC251
RA141
RA142
JT102
S301
S302
S303
S304
S305
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S308
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S316
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S318
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S321
S322
S323
S324
S325
S326
S327
S328
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Q202
Q203
Q204
Q205
Q206
Q207
Q208
Q209
Q261
Q262
Q303
Q304
Q305
Q306

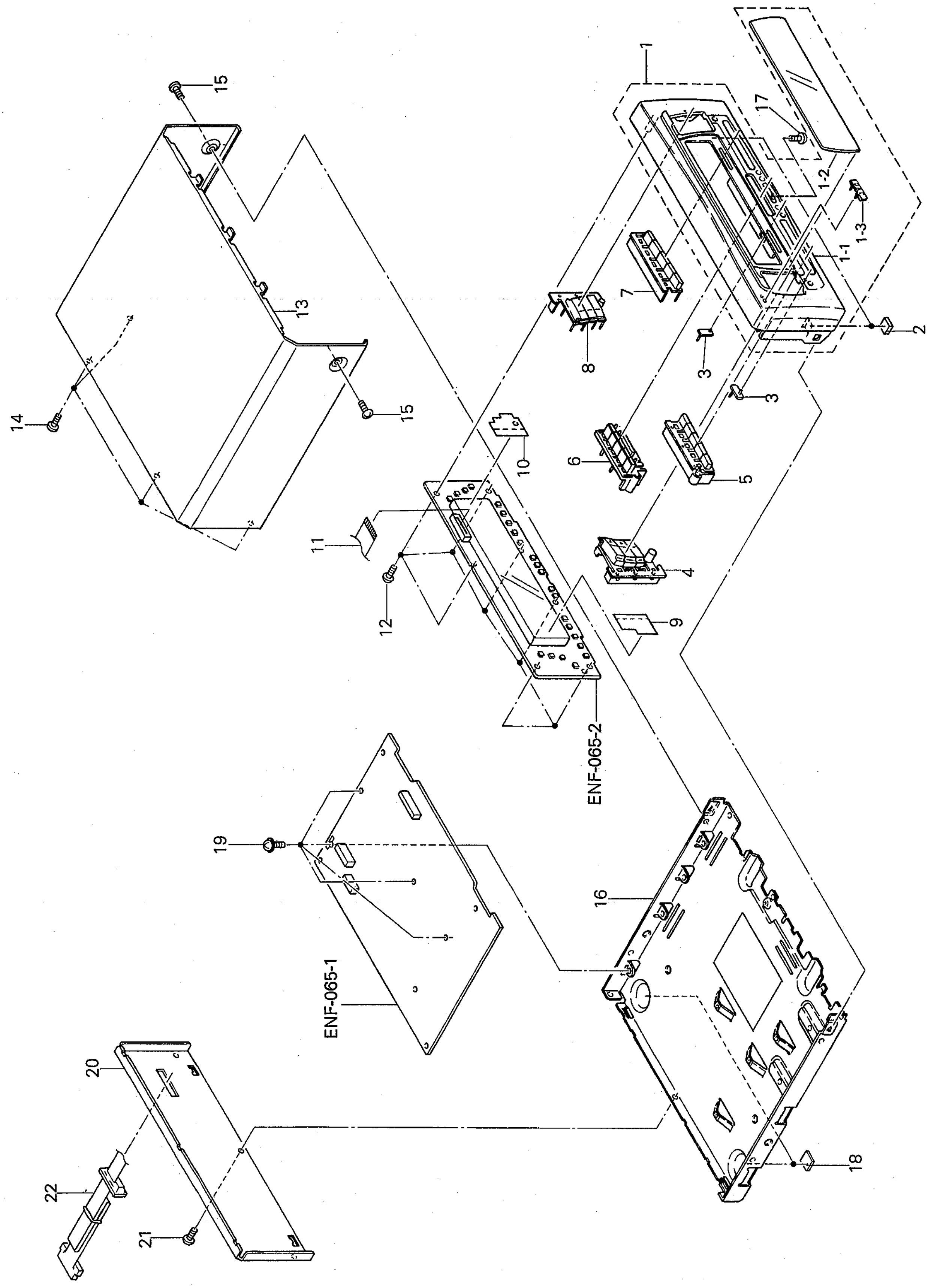
PARTS LIST

Note : All printed circuit boards and its assemblies are not available as service parts.

Contents

General Exploded View and Parts List 2-2
Printed Circuit Board and Parts List 2-5
■ ENF-065 ☐ Main & Front PC Board Ass'y 2-5

General Exploded View and Parts List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ENF-065-1
ENF-065-2

■ Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-SEMXG7BKE(S	FRONT PANEL ASSY	1		A
		EFP-SEMXG7BKE(S	FRONT PANEL ASSY	1		BS
		EFP-SEMXG7BKE(S	FRONT PANEL ASSY	1		EF
		EFP-SEMXG7BKE(S	FRONT PANEL ASSY	1		EN
		EFP-SEMXG7BKE(S	FRONT PANEL ASSY	1		G
		EFP-SEMXG7BKE(S	FRONT PANEL ASSY	1		GI
		EFP-SEMXG7BKU(S	FRONT PANEL ASSY	1		U
		EFP-SEMXG7BKU(S	FRONT PANEL ASSY	1		UT
	1-1	E102628-005	FRONT PANEL	1		A
		E102628-005	FRONT PANEL	1		BS
		E102628-005	FRONT PANEL	1		EF
		E102628-005	FRONT PANEL	1		EN
		E102628-005	FRONT PANEL	1		G
		E102628-005	FRONT PANEL	1		GI
		E102628-006	FRONT PANEL	1		U
		E102628-006	FRONT PANEL	1		UT
	1-2	E207611-004	WINDOW SCREEN	1		
	1-3	E406971-221	JVC MARK	1		
	2	E406855-008	SPACER	2	FRONT FOOT	
	3	E406673-001	INDICATOR	2		
	4	E207613-003	PUSH BUTTON ASSY	1		A
		E207613-003	PUSH BUTTON ASSY	1		BS
		E207613-003	PUSH BUTTON ASSY	1		EF
		E207613-003	PUSH BUTTON ASSY	1		EN
		E207613-003	PUSH BUTTON ASSY	1		G
		E207613-003	PUSH BUTTON ASSY	1		GI
		E207613-002	PUSH BUTTON ASSY	1		U
		E207613-002	PUSH BUTTON ASSY	1		UT
	5	E207618-003	PUSH BUTTON	1		A
		E207618-003	PUSH BUTTON	1		BS
		E207618-003	PUSH BUTTON	1		EF
		E207618-003	PUSH BUTTON	1		EN
		E207618-003	PUSH BUTTON	1		G
		E207618-003	PUSH BUTTON	1		GI
		E207618-002	PUSH BUTTON	1		U
		E207618-002	PUSH BUTTON	1		UT
	6	E207622-003	PUSH BUTTON	1		
	7	E207620-002	PUSH BUTTON	1		
	8	E207616-003	PUSH BUTTON	1		A
		E207616-003	PUSH BUTTON	1		BS
		E207616-003	PUSH BUTTON	1		EF
		E207616-003	PUSH BUTTON	1		EN
		E207616-003	PUSH BUTTON	1		G
		E207616-003	PUSH BUTTON	1		GI
		E207616-002	PUSH BUTTON	1		U
		E207616-002	PUSH BUTTON	1		UT
	9	E407420-001	SPACER	1		
	10	E407421-001	SPACER	1		
	11	E407363-002	FLAT WIRE	1		
	12	SDSF2608Z	SCREW	7		

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	13	E207626-001	METAL COVER	1		
	14	E73273-003	SPECIAL SCREW	4		
	15	SDSG3008M	SCREW	2		
	16	E102462-001	CHASSIS BASE	1		
	17	E74304-001	SCREW	1		
	18	E406855-005	SPACER	2	REAR FOOT	
	19	GBSG3008CC	SCREW	4		
	20	E207624-004	REAR PANEL	1		A
		E207624-004	REAR PANEL	1		BS
		E207624-004	REAR PANEL	1		EF
		E207624-004	REAR PANEL	1		EN
		E207624-004	REAR PANEL	1		G
		E207624-004	REAR PANEL	1		GI
		E207624-003	REAR PANEL	1		U
		E207624-003	REAR PANEL	1		UT
	21	SBSG3008CC	SCREW	1		
	22	EWP902-032	FLAT WIRE ASSY	1		
	–	E61029-005	NUMBER LABEL	1		

⚠ SAFETY PARTS

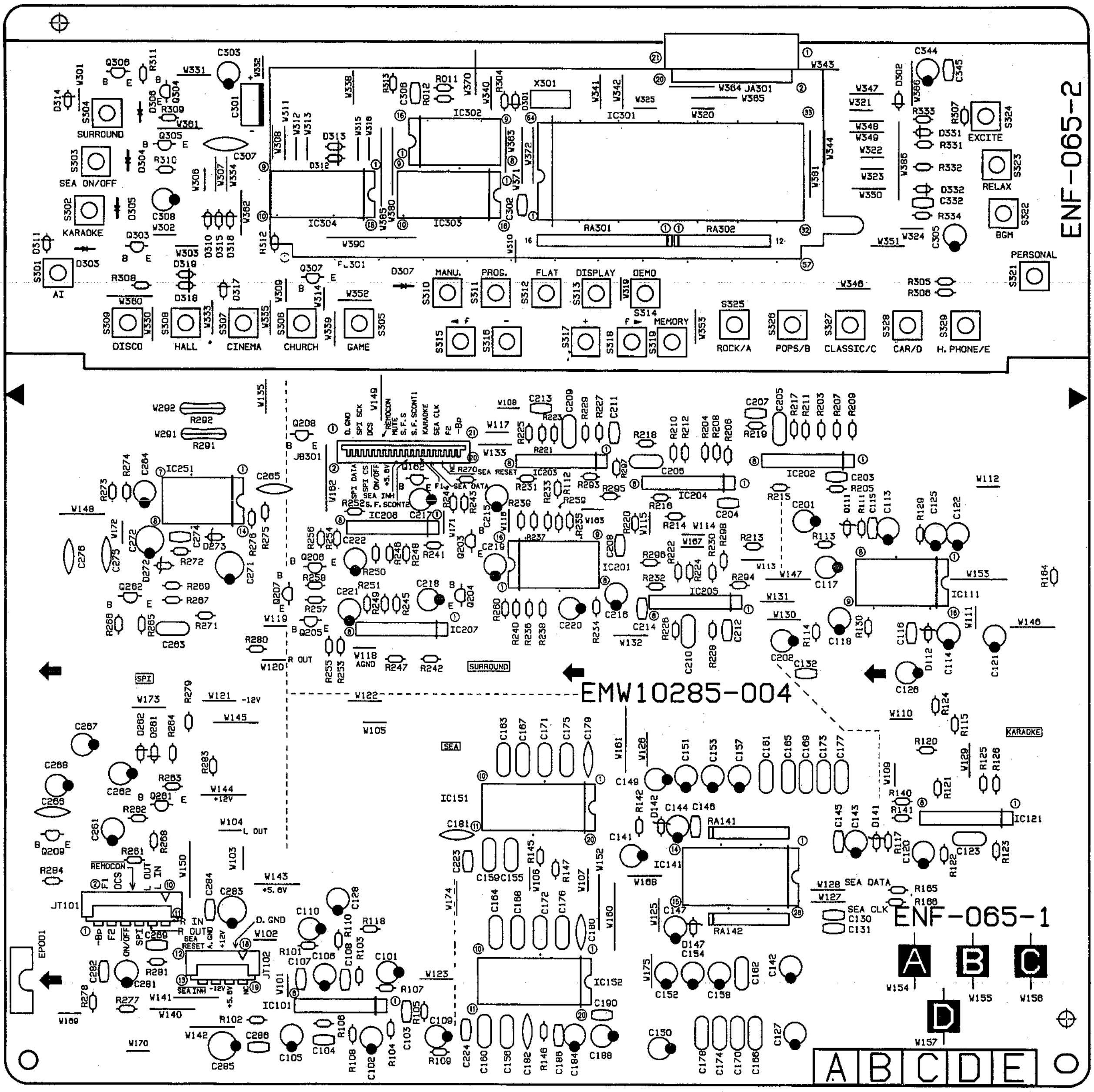
The Marks for Designated Areas

A	Australia	EN	Scandinavia	EF	Continental Europe
BS	the U.K.	G	Germany	GI	Itary
UT	Taiwan	U	Universal	**No mark indicates all areas.**	

Printed Circuit Board Ass'y and Parts List

■ENF-065☐ Main & Front PC Board Ass'y

Note : ENF-065☐ varies according to the areas employed. See note (1) when placing an order.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KARAOKE
AI
DISCO
HALL
CINEMA
CHURCH
GAME
MANU.
PROG.
FLAT
DISPLAY
DEMO
MEMORY
ROCK/A
POPS/B
CLASSIC/C
CAR/D
H. PHONE/E
EXCITE
RELAX
BGH
PERSONAL
IC301
IC302
IC303
IC304
JA301
X301
RA301
RA302
JB301
IC251
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IC111
IC121
IC141
IC151
IC152
IC101
JT101
JT102
RA141
RA142
EP001
SPI
SEA
SURROUND
KARAOKE
EMW10285-004
ENF-065-1
A
B
C
D
E

Note (1)

PC Board Ass'y	Designated Areas
ENF-065 B	Australia, the U.K. Scandinavia Continental Europe
ENF-065 C	Germany, Italy
ENF-065 D	Taiwan, Universal Type

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
	Q162	DTA144ES	SILICON	ROHM	
	Q203	2SD2144S(VW)	SILICON	ROHM	
	Q204	2SD2144S(VW)	SILICON	ROHM	
	Q205	2SD2144S(VW)	SILICON	ROHM	
	Q206	2SD2144S(VW)	SILICON	ROHM	
	Q207	DTA144ES	SILICON	ROHM	
	Q208	DTC114WS	SILICON		
	Q209	DTC114WS	SILICON		
	Q261	2SC1740S(R,S)	SILICON	ROHM	
	Q262	2SC1740S(R,S)	SILICON	ROHM	
	Q303	DTC114WS	SILICON		
	Q304	DTC114WS	SILICON		
	Q305	DTC114WS	SILICON		
	Q306	DTC114WS	SILICON		
	Q307	DTC114WS	SILICON		

⚠ SAFETY PARTS

I.C.s

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC101	XRA15218N	I.C. EXAR JAPAN	
	IC111	BU4053B	I.C. ROHM	
	IC121	XRA15218N	I.C. EXAR JAPAN	
	IC141	LC7522	I.C. SANYO	
	IC151	LA3607S	I.C. SANYO	
	IC152	LA3607S	I.C. SANYO	
	IC201	TC4052BP	I.C. TOSHIBA	
	IC202	XRA15218N	I.C. EXAR JAPAN	
	IC203	XRA15218N	I.C. EXAR JAPAN	
	IC204	XRA15218N	I.C. EXAR JAPAN	
	IC205	XRA15218N	I.C. EXAR JAPAN	
	IC206	XRA15218N	I.C. EXAR JAPAN	
	IC207	XRA15218N	I.C. EXAR JAPAN	
	IC251	XR1097CP	I.C. EXAR JAPAN	
	IC301	MN171602JHI	I.C. MATSUSHITA	B
	IC301	MN171602JHI	I.C. MATSUSHITA	C
	IC301	MN171602JPV	I.C. MATSUSHITA	D
	IC302	TC74HC42AP	I.C. TOSHIBA	
	IC303	AN6873N	I.C. MATSUSHITA	
	IC304	AN6873N	I.C. MATSUSHITA	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D111	MTZ5.1JC	ZENER ROHM	
	D112	MTZ5.1JC	ZENER ROHM	
	D141	MTZ6.8JC	ZENER ROHM	
	D142	MTZ6.8JC	ZENER ROHM	
	D147	MTZ5.1JB	ZENER ROHM	
	D261	1SS119	SILICON HITACHI	
	D262	1SS119	SILICON HITACHI	
	D272	MTZ5.1JC	ZENER ROHM	
	D273	MTZ5.1JC	ZENER ROHM	
	D301	1SS119	SILICON HITACHI	
	D302	1SS119	SILICON HITACHI	
	D303	SLR-342VC3F	L.E.D. ROHM	
	D304	SLR-342VC3F	L.E.D. ROHM	
	D305	SLR-342VC3F	L.E.D. ROHM	
	D306	SLR-342VC3F	L.E.D. ROHM	
	D307	SLR-342VC3F	L.E.D. ROHM	
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	D314	1SS119	SILICON HITACHI	
	D315	1SS119	SILICON HITACHI	
	D316	1SS119	SILICON HITACHI	
	D317	1SS119	SILICON HITACHI	
	D318	1SS119	SILICON HITACHI	
	D319	1SS119	SILICON HITACHI	
	D331	1SS119	SILICON HITACHI	
	D332	1SS119	SILICON HITACHI	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C101	QETB1EM-106	10MF 25V ELECTRO	
	C102	QETB1EM-106	10MF 25V ELECTRO	
	C103	QCSB1HJ-470	47PF 50V CERAMIC	
	C104	QCSB1HJ-470	47PF 50V CERAMIC	
	C105	QETB1CM-476	47MF 16V ELECTRO	
	C106	QETB1CM-476	47MF 16V ELECTRO	
	C107	QCVB1CM-103	0.01MF 16V CERAMIC	
	C108	QCVB1CM-103	0.01MF 16V CERAMIC	
	C109	QETB1EM-106	10MF 25V ELECTRO	
	C110	QETB1EM-106	10MF 25V ELECTRO	
	C113	QETB1AM-107	100MF 10V ELECTRO	
	C114	QETB1AM-107	100MF 10V ELECTRO	
	C115	QCVB1CM-103	0.01MF 16V CERAMIC	
	C116	QCVB1CM-103	0.01MF 16V CERAMIC	
	C117	QETB1HM-105	1MF 50V ELECTRO	
	C118	QETB1HM-105	1MF 50V ELECTRO	
	C120	QETB1HM-475	4.7MF 50V ELECTRO	
	C121	QEK51EM-106	10MF 25V ELECTRO	
	C122	QEK51EM-106	10MF 25V ELECTRO	
	C123	QFLB1HJ-683	0.068MF 50V MYLAR	
	C125	QEK51EM-475G	4.7MF 25V ELECTRO	
	C126	QEK51EM-475G	4.7MF 25V ELECTRO	
	C127	QETB1HM-475	4.7MF 50V ELECTRO	
	C128	QETB1HM-475	4.7MF 50V ELECTRO	
	C141	QETB1HM-475	4.7MF 50V ELECTRO	
	C142	QETB1HM-475	4.7MF 50V ELECTRO	
	C143	QETB1AM-107	100MF 10V ELECTRO	
	C144	QETB1AM-107	100MF 10V ELECTRO	
	C146	QCVB1CM-103	0.01MF 16V CERAMIC	
	C147	QETB1AM-107	100MF 10V ELECTRO	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C149	QETB1HM-225	2.2MF 50V ELECTRO	
	C150	QETB1HM-225	2.2MF 50V ELECTRO	
	C151	QETB1HM-474	0.47MF 50V ELECTRO	
	C152	QETB1HM-474	0.47MF 50V ELECTRO	
	C153	QETB1HM-224	0.22MF 50V ELECTRO	
	C154	QETB1HM-224	0.22MF 50V ELECTRO	
	C155	QFV81HJ-124	0.12MF 50V T.FILM	
	C156	QFV81HJ-124	0.12MF 50V T.FILM	
	C157	QETB1HM-224	0.22MF 50V ELECTRO	
	C158	QETB1HM-224	0.22MF 50V ELECTRO	
	C159	QFLB1HJ-473	0.047MF 50V MYLAR	
	C160	QFLB1HJ-473	0.047MF 50V MYLAR	
	C161	QFLB1HJ-104	0.1MF 50V MYLAR	
	C162	QFLB1HJ-104	0.1MF 50V MYLAR	
	C163	QFLB1HJ-183	0.018MF 50V MYLAR	
	C164	QFLB1HJ-183	0.018MF 50V MYLAR	
	C165	QFLB1HJ-393	0.039MF 50V MYLAR	
	C166	QFLB1HJ-393	0.039MF 50V MYLAR	
	C167	QFLB1HJ-682	6800PF 50V MYLAR	
	C168	QFLB1HJ-682	6800PF 50V MYLAR	
	C169	QFLB1HJ-153	0.015MF 50V MYLAR	
	C170	QFLB1HJ-153	0.015MF 50V MYLAR	
	C171	QFLB1HJ-272	2700PF 50V MYLAR	
	C172	QFLB1HJ-272	2700PF 50V MYLAR	
	C173	QFLB1HJ-562	5600PF 50V MYLAR	
	C174	QFLB1HJ-562	5600PF 50V MYLAR	
	C175	QFLB1HJ-122	1200PF 50V MYLAR	
	C176	QFLB1HJ-122	1200PF 50V MYLAR	
	C177	QFLB1HJ-222	2200PF 50V MYLAR	
	C178	QFLB1HJ-222	2200PF 50V MYLAR	
	C179	QCS21HJ-471	470PF 50V CERAMIC	
	C180	QCS21HJ-471	470PF 50V CERAMIC	
	C181	QCS21HJ-101	100PF 50V CERAMIC	
	C182	QCS21HJ-101	100PF 50V CERAMIC	
	C184	QETB1AM-107	100MF 10V ELECTRO	
	C186	QCVB1CM-103	0.01MF 16V CERAMIC	
	C188	QETB1AM-107	100MF 10V ELECTRO	
	C190	QCVB1CM-103	0.01MF 16V CERAMIC	
	C201	QETB1EM-106	10MF 25V ELECTRO	
	C202	QETB1EM-106	10MF 25V ELECTRO	
	C203	QCSB1HJ-470	47PF 50V CERAMIC	
	C204	QCSB1HJ-470	47PF 50V CERAMIC	
	C205	QFLB1HJ-104	0.1MF 50V MYLAR	
	C206	QFLB1HJ-104	0.1MF 50V MYLAR	
	C207	QCGB1HK-102	1000PF 50V CERAMIC	
	C208	QCGB1HK-102	1000PF 50V CERAMIC	
	C209	QFLB1HJ-222	2200PF 50V MYLAR	
	C210	QFLB1HJ-222	2200PF 50V MYLAR	
	C213	QCGB1HK-102	1000PF 50V CERAMIC	
	C214	QCGB1HK-102	1000PF 50V CERAMIC	
	C215	QETB1EM-106	10MF 25V ELECTRO	
	C216	QETB1EM-106	10MF 25V ELECTRO	
	C217	QETB1EM-106	10MF 25V ELECTRO	
	C218	QETB1EM-106	10MF 25V ELECTRO	
	C219	QETB1EM-476	47MF 25V ELECTRO	
	C220	QETB1EM-476	47MF 25V ELECTRO	
	C221	QETB1EM-106	10MF 25V ELECTRO	
	C222	QETB1EM-106	10MF 25V ELECTRO	
	C223	QCBB1HK-101	100PF 50V CERAMIC	
	C224	QCBB1HK-101	100PF 50V CERAMIC	
	C261	QETB1EM-106	10MF 25V ELECTRO	
	C262	QETB1HM-105	1MF 50V ELECTRO	
	C263	QFLB1HJ-473	0.047MF 50V MYLAR	
	C264	QETB1CM-476	47MF 16V ELECTRO	
	C265	QCY21HK-102	1000PF 50V CERAMIC	
	C266	QCF21HP-473	0.047MF 50V CERAMIC	
	C267	QETB1HM-106	10MF 50V ELECTRO	
	C271	QETB0JM-227	220MF 6.3V ELECTRO	
	C272	QETB0JM-227	220MF 6.3V ELECTRO	
	C274	QCVB1CM-103	0.01MF 16V CERAMIC	
	C281	QETB1AM-107	100MF 10V ELECTRO	
	C282	QCVB1CM-103	0.01MF 16V CERAMIC	
	C283	QETB1CM-107	100MF 16V ELECTRO	
	C284	QCVB1CM-103	0.01MF 16V CERAMIC	
	C285	QETB1CM-107	100MF 16V ELECTRO	
	C286	QCVB1CM-103	0.01MF 16V CERAMIC	
	C301	QEAD0HZ-479A	47000MF ELECTRO	
	C302	QCVB1CM-103	0.01MF 16V CERAMIC	
	C303	QETB1HM-226	22MF 50V ELECTRO	
	C305	QETB1AM-107	100MF 10V ELECTRO	
	C306	QCVB1CM-103	0.01MF 16V CERAMIC	
	C307	QCF21HP-103	0.01MF 50V CERAMIC	
	C308	QETB1AM-107	100MF 10V ELECTRO	
	C332	QCBB1HK-471	470PF 50V CERAMIC	
	C344	QETB1AM-107	100MF 10V ELECTRO	
	C345	QCVB1CM-103	0.01MF 16V CERAMIC	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R011	QRD167J-104	100K 1/6W CARBON	
	R012	QRD167J-104	100K 1/6W CARBON	
	R101	QRD161J-221	220 1/6W CARBON	
	R102	QRD161J-221	220 1/6W CARBON	
	R103	QRD167J-473	47K 1/6W CARBON	
	R104	QRD167J-473	47K 1/6W CARBON	
	R105	QRD167J-912	9.1K 1/6W CARBON	
	R106	QRD167J-912	9.1K 1/6W CARBON	
	R107	QRD167J-104	100K 1/6W CARBON	
	R108	QRD167J-104	100K 1/6W CARBON	
	R109	QRD167J-104	100K 1/6W CARBON	
	R110	QRD167J-104	100K 1/6W CARBON	
	R111	QRD167J-471	470 1/6W CARBON	
	R112	QRD167J-471	470 1/6W CARBON	
	R113	QRD167J-473	47K 1/6W CARBON	
	R114	QRD167J-473	47K 1/6W CARBON	
	R115	QRD167J-224	220K 1/6W CARBON	
	R117	QRD167J-123	12K 1/6W CARBON	
	R118	QRD167J-123	12K 1/6W CARBON	
	R120	QRD167J-104	100K 1/6W CARBON	
	R121	QRD167J-473	47K 1/6W CARBON	
	R122	QRD167J-473	47K 1/6W CARBON	
	R123	QRD167J-473	47K 1/6W CARBON	
	R124	QRD167J-473	47K 1/6W CARBON	
	R125	QRD167J-473	47K 1/6W CARBON	
	R126	QRD167J-473	47K 1/6W CARBON	
	R129	QRD167J-104	100K 1/6W CARBON	
	R130	QRD167J-104	100K 1/6W CARBON	
	R140	QRD167J-301	300 1/6W CARBON	
	R141	QRD167J-301	300 1/6W CARBON	
	R142	QRD161J-221	220 1/6W CARBON	
	R145	QRD167J-113	11K 1/6W CARBON	
	R146	QRD167J-113	11K 1/6W CARBON	
	R147	QRD161J-221	220 1/6W CARBON	
	R164	QRD167J-222	2.2K 1/6W CARBON	
	R165	QRD167J-222	2.2K 1/6W CARBON	
	R166	QRD167J-222	2.2K 1/6W CARBON	
	R170	QRD167J-151	150 1/6W CARBON	
	R203	QRD167J-104	100K 1/6W CARBON	
	R204	QRD167J-104	100K 1/6W CARBON	
	R205	QRD167J-103	10K 1/6W CARBON	
	R206	QRD167J-103	10K 1/6W CARBON	
	R207	QRD167J-473	47K 1/6W CARBON	
	R208	QRD167J-473	47K 1/6W CARBON	
	R209	QRD167J-682	6.8K 1/6W CARBON	
	R210	QRD167J-682	6.8K 1/6W CARBON	
	R211	QRD167J-103	10K 1/6W CARBON	
	R212	QRD167J-103	10K 1/6W CARBON	
	R213	QRD167J-103	10K 1/6W CARBON	
	R214	QRD167J-103	10K 1/6W CARBON	
	R215	QRD167J-103	10K 1/6W CARBON	
	R216	QRD167J-103	10K 1/6W CARBON	
	R217	QRD167J-103	10K 1/6W CARBON	
	R218	QRD167J-103	10K 1/6W CARBON	
	R219	QRD167J-103	10K 1/6W CARBON	
	R220	QRD167J-103	10K 1/6W CARBON	
	R221	QRD167J-103	10K 1/6W CARBON	
	R222	QRD167J-103	10K 1/6W CARBON	
	R223	QRD167J-103	10K 1/6W CARBON	
	R224	QRD167J-103	10K 1/6W CARBON	
	R225	QRD167J-103	10K 1/6W CARBON	
	R226	QRD167J-103	10K 1/6W CARBON	
	R227	QRD167J-224	220K 1/6W CARBON	
	R228	QRD167J-224	220K 1/6W CARBON	
	R229	QRD167J-103	10K 1/6W CARBON	
	R230	QRD167J-103	10K 1/6W CARBON	
	R233	QRD167J-224	220K 1/6W CARBON	
	R234	QRD167J-224	220K 1/6W CARBON	
	R237	QRD167J-243	24K 1/6W CARBON	
	R238	QRD167J-243	24K 1/6W CARBON	
	R239	QRD167J-563	56K 1/6W CARBON	
	R240	QRD167J-563	56K 1/6W CARBON	
	R241	QRD167J-224	220K 1/6W CARBON	
	R242	QRD167J-224	220K 1/6W CARBON	
	R243	QRD167J-103	10K 1/6W CARBON	
	R244	QRD167J-103	10K 1/6W CARBON	
	R245	QRD167J-103	10K 1/6W CARBON	
	R246	QRD167J-103	10K 1/6W CARBON	
	R247	QRD167J-103	10K 1/6W CARBON	
	R248	QRD167J-103	10K 1/6W CARBON	
	R249	QRD167J-103	10K 1/6W CARBON	
	R250	QRD167J-103	10K 1/6W CARBON	
	R251	QRD167J-103	10K 1/6W CARBON	
	R252	QRD167J-103	10K 1/6W CARBON	
	R253	QRD167J-104	100K 1/6W CARBON	
	R254	QRD167J-104	100K 1/6W CARBON	
	R255	QRD161J-221	220 1/6W CARBON	
	R256	QRD161J-221	220 1/6W CARBON	
	R257	QRD167J-103	10K 1/6W CARBON	
	R258	QRD167J-103	10K 1/6W CARBON	
	R259	QRD167J-133	13K 1/6W CARBON	
	R260	QRD167J-133	13K 1/6W CARBON	
	R261	QRD167J-513	51K 1/6W CARBON	
	R262	QRD167J-204	200K 1/6W CARBON	
	R263	QRD167J-222	2.2K 1/6W CARBON	
	R264	QRD167J-102	1K 1/6W CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R265	QRD167J-104	100K 1/6W CARBON	
	R266	QRD167J-103	10K 1/6W CARBON	
	R267	QRD167J-473	47K 1/6W CARBON	
	R268	QRD167J-393	39K 1/6W CARBON	
	R269	QRD167J-562	5.6K 1/6W CARBON	
	R270	QRD167J-223	22K 1/6W CARBON	
	R271	QRD167J-331	330 1/6W CARBON	
	R272	QRD167J-301	300 1/6W CARBON	
	R273	QRD167J-223	22K 1/6W CARBON	
	R274	QRD167J-223	22K 1/6W CARBON	
	R275	QRD167J-152	1.5K 1/6W CARBON	
	R276	QRD167J-563	56K 1/6W CARBON	
	R277	QRD161J-221	220 1/6W CARBON	
	R279	QRD161J-221	220 1/6W CARBON	
	R280	QRD161J-221	220 1/6W CARBON	
	R281	QRD167J-103	10K 1/6W CARBON	
	R283	QRD161J-221	220 1/6W CARBON	
	R284	QRD161J-221	220 1/6W CARBON	
	R293	QRD167J-103	10K 1/6W CARBON	
	R294	QRD167J-103	10K 1/6W CARBON	
	R295	QRD167J-103	10K 1/6W CARBON	
	R296	QRD167J-103	10K 1/6W CARBON	
	R297	QRD167J-103	10K 1/6W CARBON	
	R298	QRD167J-103	10K 1/6W CARBON	
	R304	QRD167J-104	100K 1/6W CARBON	
	R305	QRD167J-103	10K 1/6W CARBON	
	R306	QRD167J-103	10K 1/6W CARBON	
	R307	QRD167J-103	10K 1/6W CARBON	
	R308	QRD167J-431	430 1/6W CARBON	
	R309	QRD167J-391	390 1/6W CARBON	
	R310	QRD167J-431	430 1/6W CARBON	
	R311	QRD167J-511	510 1/6W CARBON	
	R312	QRD167J-331	330 1/6W CARBON	
	R313	QRD167J-470	47 1/6W CARBON	
	R331	QRD161J-221	220 1/6W CARBON	
	R332	QRD161J-221	220 1/6W CARBON	
	R333	QRD167J-473	47K 1/6W CARBON	
	R334	QRD167J-473	47K 1/6W CARBON	
	RA141	QRB099J-474	470K 1/10W R.NETWORK	
	RA142	QRB099J-474	470K 1/10W R.NETWORK	

⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	L170	EQL4004-1R0	INDUCTOR	
	S301	ESP0001-023M	TACT SWITCH(AI)	
	S302	ESP0001-023M	TACT SWITCH(KARAOKE)	
	S303	ESP0001-023M	TACT SWITCH(SEA ON/OFF)	
	S304	ESP0001-023M	TACT SWITCH(PANORAMA SURROUND)	
	S305	ESP0001-023M	TACT SWITCH(GAME)	
	S306	ESP0001-023M	TACT SWITCH(CHURCH)	
	S307	ESP0001-023M	TACT SWITCH(CINEMA)	
	S308	ESP0001-023M	TACT SWITCH(HALL)	
	S309	ESP0001-023M	TACT SWITCH(DISCO)	
	S310	ESP0001-023M	TACT SWITCH(MANUAL)	
	S311	ESP0001-023M	TACT SWITCH(PROGRAM)	
	S312	ESP0001-023M	TACT SWITCH(FLAT)	
	S313	ESP0001-023M	TACT SWITCH(DISPLAY)	
	S314	ESP0001-023M	TACT SWITCH(DEMO)	
	S315	ESP0001-023M	TACT SWITCH(FREQUENCY ◀)	
	S316	ESP0001-023M	TACT SWITCH(LEVEL −)	
	S317	ESP0001-023M	TACT SWITCH(LEVEL +)	
	S318	ESP0001-023M	TACT SWITCH(FREQUENCY ▶)	
	S319	ESP0001-023M	TACT SWITCH(MEMORY)	
	S321	ESP0001-023M	TACT SWITCH(PERSONAL)	
	S322	ESP0001-023M	TACT SWITCH(BGM)	
	S323	ESP0001-023M	TACT SWITCH(RELAX)	
	S324	ESP0001-023M	TACT SWITCH(EXCITE)	
	S325	ESP0001-023M	TACT SWITCH(ROCK/A)	
	S326	ESP0001-023M	TACT SWITCH(POPS/B)	
	S327	ESP0001-023M	TACT SWITCH(CLASSIC/C)	
	S328	ESP0001-023M	TACT SWITCH(CAR/D)	
	S329	ESP0001-023M	TACT SWITCH(H.PHONE/E)	
	X301	ECX0060-000EM	RESONATOR	
	EP001	E70859-001	EARTH PLATE	
	FL301	ELU0001-156	FL TUBE	B
	FL301	ELU0001-156	FL TUBE	C
	FL301	ELU0001-145	FL TUBE	D
	JA301	EMV7123-021R	CONNECTOR(21PIN) TO FRONT : MAIN	
	JB301	EMV7123-021	CONNECTOR(21PIN) TO MAIN : FRONT	
	JT101	EMV7141-011	CONNECTOR(11PIN) FROM SYSTEM CONNECTOR : RX	
	JT102	EMV7141-008M	CONNECTOR(8PIN) FROM SYSTEM CONNECTOR : RX	
	SB301	E306958-002	FL DISPLAY HOLDER	
	SP301	E306805-021	FELT SPACER	

⚠ : SAFETY PARTS

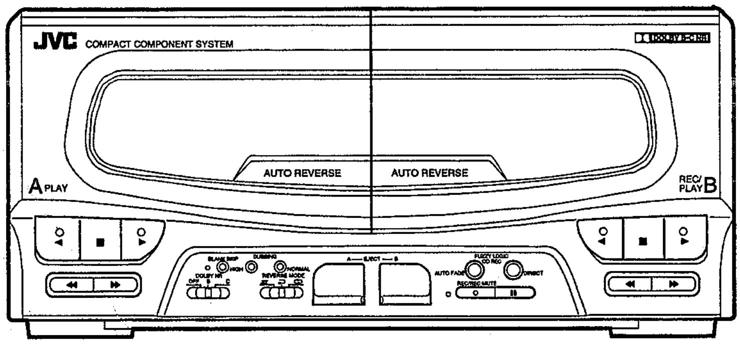
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

CA-MXG7BK/XT-MXG7BK

(Unit No. TD-MXG7BK)


JVC COMPACT COMPONENT SYSTEM
AUTO REVERSE
AUTO REVERSE
A PLAY
REC/PLAY B
AUTO FADE
DIRECT

** For instruction manual, packing materials and accessories, please refer to the RX-MXG7BK (S.M.No.20393).*
** RX-MXG7BK is needed (for power supply etc.) when servicing.*

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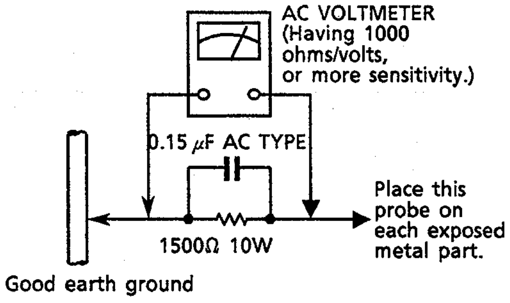
Printed Circuit Board .... Insertion
Parts List .... Insertion

No. 20395
Jan. 1993

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).


AC VOLTMETER (Having 1000 ohms/volts, or more sensitivity.)
0.15 μF AC TYPE
Place this probe on each exposed metal part.
1500Ω 10W
Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Description of Major LSIs

■ HD614081SD39(IC401) : System controller

1. Terminal Layout

A SPEED UP	1	64	
B SPEED UP	2	63	B FWD LED
A FWD LED	3	62	B REV LED
A REV LED	4	61	
CAP MOTOR	5	60	NR OFF/ON
REC	6	59	NR B/C
REC LED	7	58	BIAS
BLANK SKIP LED	8	57	GND
	9	56	REC MUTE
A CAM SW-2	10	55	DCS IN
A CAM SW-1	11	54	DCS OUT
A CA SW-0	12	53	GND
A PULSE IN	13	52	4.19MHzOSC IN
B CAM SW-2	14	51	4.19MHzOSC IN
B CAM SW-1	15	50	TO VCC
B CAM SW-0	16	49	RESET IN
B PULSE IN	17	48	KEY&SW IN-4
POWER OFF IN	18	47	KEY&SW IN-3
MSI	19	46	KEY&SW IN-2
A FWD REEL MOTOR	20	45	KEY&SW IN-1
A REV REEL MOTOR	21	44	KEY OUT-7
A REV CAM MOTOR	22	43	KEY OUT-6
A FWD CAM MOTOR	23	42	KEY OUT-5
B FWD REEL MOTOR	24	41	KEY OUT-4
B REV REEL MOTOR	25	40	KEY OUT-3
B REV CAM MOTOR	26	39	KEY OUT-2
B FWD CAM MOTPOR	27	38	KEY OUT-1
O MUTE	28	37	STB
METAL	29	36	CS
DUB	30	35	DATA
BEQ	31	34	DO
+ 5V	32	33	CLK

2. Key Matrix

	KEY&SW-1 (Pin45)	KEY&SW-2 (Pin46)	KEY&SW-3 (Pin47)	KEY&SW-4 (Pin48)
KEY OUT 1 (Pin38)	A ◀	A ◀◀	A ▶▶	A ▶
KEY OUT 2 (Pin39)	B ◀	B ◀◀	B ▶▶	B ▶
KEY OUT 3 (Pin40)	A ■	B ■	B ●	B ❚❚
KEY OUT 4 (Pin41)	A▶▶B	A▶B	—	BLANK SKIP
KEY OUT 5 (Pin42)	FUZZY DIRECT	FUZZY AUTO	—	—
KEY OUT 6 (Pin43)	B PACK	REV REC	FWD REC	A PACK
KEY OUT 7 (Pin44)	—	B CrO2	B METAL	—

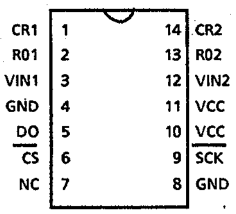
3. Terminal Description

Pin	Symbol	I/O	Description
1	A SPEED UP	O	A deck speed control output
2	B SPEED UP	O	B deck speed control output
3	A FWD LED	O	Indication signal for A forward LED
4	A REV LED	O	Indication signal for A reverse LED
5	CAP MOTOR	O	Capstan motor control signal
6	REC	O	Recording control signal (H : REC)
7	B REC LED	O	Indication signal for recording
8	BLA. SKIP LED	O	Indication signal for Blank skip
9		--	Not used
10	A CAM SW 2	I	Input terminal for mech. and head status
11	A CAM SW 1	I	〃
12	A CAM SW 0	I	〃
13	A PULSE IN	I	Pulse signal input from Reel
14	B CAM SW 2	I	Input terminal for mech. and head status
15	B CAM SW 1	I	〃
16	B CAM SW 0	I	〃
17	B PULSE	I	Pulse signal input from Reel
18	POW. OFF IN	I	Power ON/OFF signal input
19	MS IN	I	Blank detect terminal for music scan
20	AFWD REEL	O	Reel motor control signal
21	A REV REEL	O	Reel motor control signal
22	A REV CAM	O	Cam motor control signal
23	AFWD CAM	O	Cam motor control signal
24	B FWD REEL	O	Reel motor control signal
25	B REV REEL	O	Reel motor control signal
26	B REV CAM	O	Cam motor control signal
27	B FWD CAM	O	Cam motor control signal
28	OMUTE	O	Play muting control
29	METAL	O	Recording bias control for METAL tape
30	DUB	O	High speed dubbing control
31	BEQ	O	Equalizer switching signal
32	+ 5V	--	Power supply
33	CLK	O	Clock for data transfer
34	DO	O	Data output
35	DATA	I	Data input
36	CS	O	Chip select signal
37	STB	O	Strobe signal output
38	KO 1	O	Key matrix output
39	KO 2	O	〃
40	KO 3	O	〃
41	KO 4	O	〃
42	KO 5	O	〃
43	KO 6	O	〃
44	KO 7	O	〃
45	KI 1	I	Key matrix input
46	KI 2	I	〃
47	KI 3	I	〃
48	KI 4	I	〃
49	RESET	I	Reset signal input
50	TO VCC	--	Connected to + 5V
51	4.19MHzOSC	I/O	Clock oscillation terminal
52	4.19MHzOSC	I/O	〃
53	GND	--	Ground
54	DCS OUT	O	Compulink signal output
55	DCS IN	I	Compulink signal input
56	REC. MUTE	O	Recording mute signal output
57	GND	--	Ground
58	BIAS	O	ON / OFF signal for bias circuit
59	NR B/C	O	NR B / C switching signal
60	NR OFF/ON	O	NR ON/OFF signal output
61		--	Not used
62	B REV LED	O	Indication signal for B reverse
63	B FWD LED	O	Indication signal for B forward
64		--	Not used

Internal Block Diagram of Other ICs

■ M62302P(IC202) : A/D converter for AV level

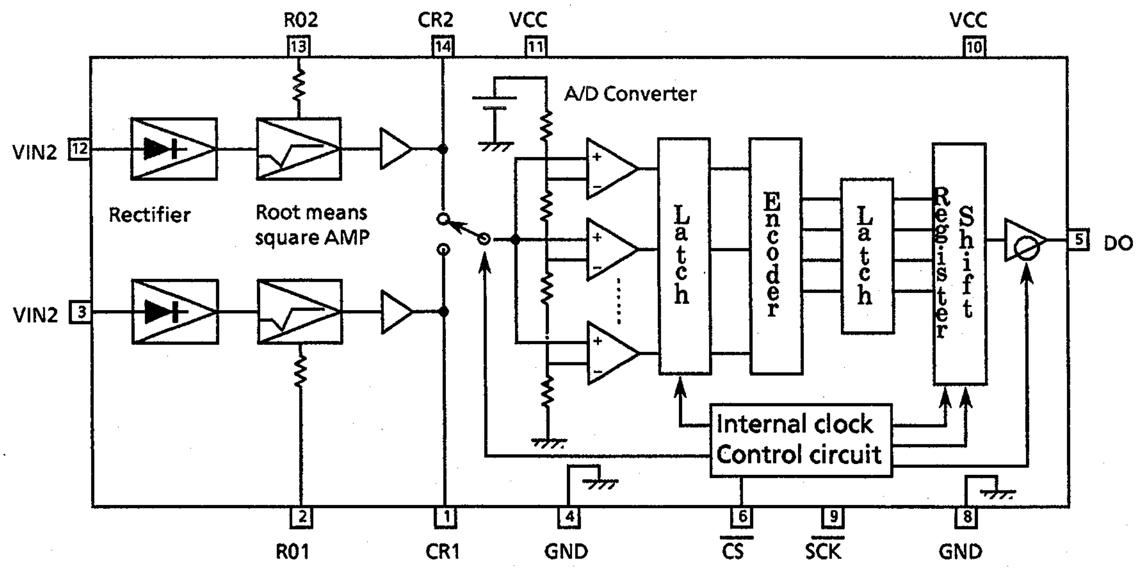
1. Terminal Layout


CR1 1
R01 2
VIN1 3
GND 4
DO 5
CS 6
NC 7
14 CR2
13 R02
12 VIN2
11 VCC
10 VCC
9 SCK
8 GND

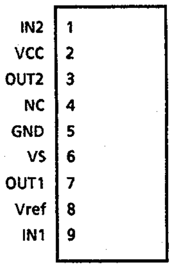
2.Terminal Description

Pin No.	Symbol	I/O	Description
1 14	CR1 CR2	O	This is a terminal to determine the response of the output.
2 13	R01 R02	O	This is a terminal to determine the response of the output.
3 12	VIN1 VIN2	I	Analog signal input terminal
4 8	GND	–	Ground
5	DO	O	Digital ooutput terminal
6	$\overline{\text{CS}}$	I	Chip select terminal DO terminal is enable when this terminal is "L'.
9	$\overline{\text{SCK}}$	I	Clock signal input The accuracy of the A/D conversion depends on this clock speed.
10 11	VCC	–	+5V

3. Block Diagram


R02
13
CR2
14
VCC
11
VCC
10
A/D Converter
VIN2
12
Rectifier
Root means square AMP
VIN2
3
Latch
Encoder
Latch
Register
Shift
5
DO
Internal clock Control circuit
2
R01
1
CR1
4
GND
6
CS
9
SCK
8
GND

■ TA8409S (IC451~454) : DC motor driver

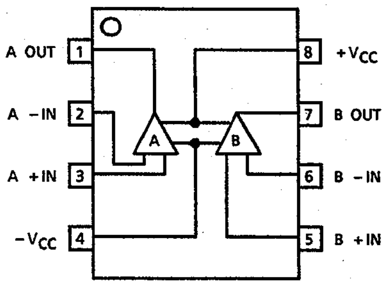

IN2 1
VCC 2
OUT2 3
NC 4
GND 5
VS 6
OUT1 7
Vref 8
IN1 9

Function

Input		Output		Mode
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	OPEN
0	1	L	H	CLOSE
1	1	L	L	BRAKE

∞ : High impedance

■ VC4580LD (IC111,112) : Dual OP Amp.


A OUT 1
A −IN 2
A +IN 3
−Vcc 4
8 +Vcc
7 B OUT
6 B −IN
5 B +IN
A
B

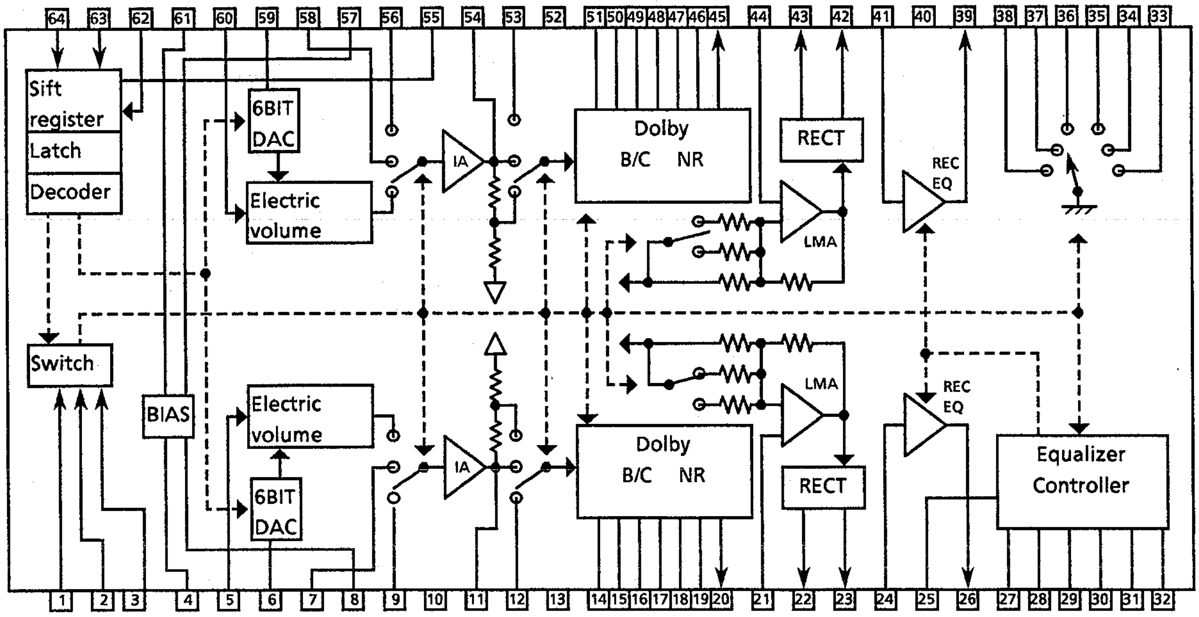
■ HA12155NT (IC201) : Signal processor

Function

REC Equalizer
Dolby B/C
Electric Volume
Level meter

Description

1) REC level automatic control
2) The signal which is not decoded is output from REC OUT during Playback.
3) Standard/high speed, Normal/CrO2/METAL switchng
4) NR-ON/OFF,Dolby B/C,switching

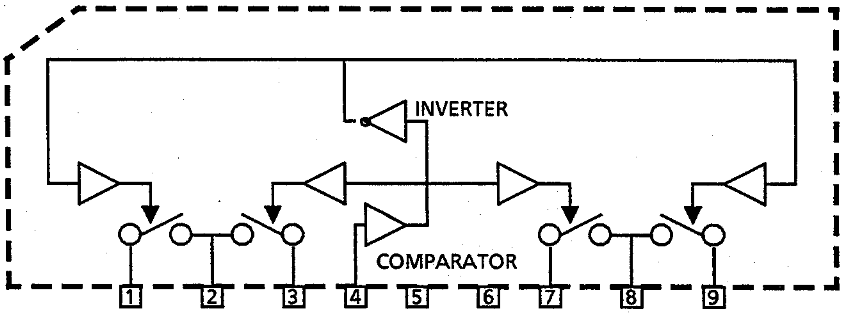

64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
Sift register
Latch
Decoder
6BIT DAC
Electric volume
IA
Dolby B/C NR
RECT
REC EQ
LMA
Switch
BIAS
Electric volume
6BIT DAC
IA
Dolby B/C NR
LMA
RECT
REC EQ
Equalizer Controller
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

PinNO	Function	PinNO	Function	PinNO	Function
1	NR ON/OFF input	10	Connected to +5V	25	EQ Constant current input
2	NR B/C switching	14,51	Playback signal output	26,39	Recording signal input
3	Not used	15,50	Spectram slanting AMP	27~32	EQ parameter current input
4	Power supply	16,49	Spectram slanting AMP	33~38	EQ parameter select
5,60	Recording signal input	20,45	Output for REC equalizer	40,61	Ground
6,59	Capacitors are connected	21,44	Not used	55	Digital ground
7,58	Deck A playback signal input	22,43	Conected to capacitor	57	Current input for Dolby NR
8	Not used	23,42	Music scan output	62	Strobe signal input
9,56	Deck B playback signal input	24,41	Equalizer input	63	Clock input
11,12,13 54,53,52	Not used	17,18,19 48,47,46	Not used	64	Data input

■ μPC1330 HA (IC101) : HEAD SWITCH

Function

	4pin
PB	L
REC	H


INVERTER
COMPARATOR
1
2
3
4
5
6
7
8
9

Disassembly Procedures

■ Top cover removal

1. Remove the screws fastening both sides of the Top cover and rear side.
2. Remove the Top cover spreding both sides and lifting the rear up.

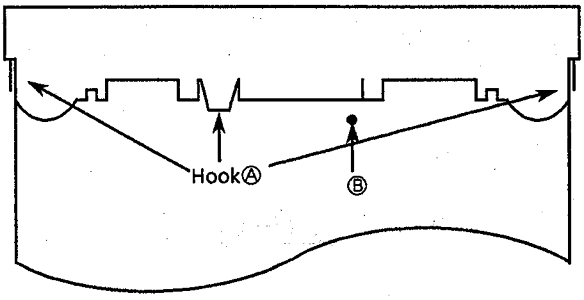


Figure 1 Bottom view of the front panel

■ Front panel block removal

1. Remove the Top cover.
2. Disconnect the connectors P101,P102,J401,J402,J403.
3. Remove the screw Ⓑ on the bottom .
4. Release the 3 hooks Ⓐ and remove the front panel block.

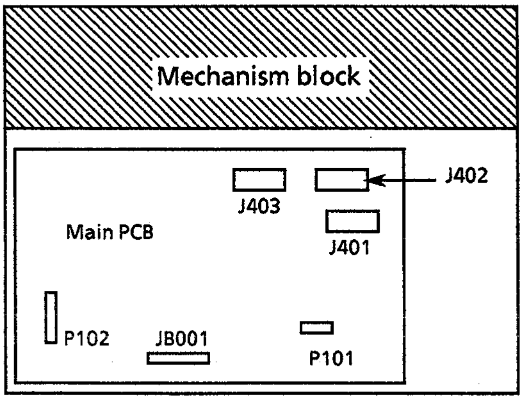


Figure 2 Top view

■ Cassette mechanism block removal

1. Remove the front panel block.
2. Disconnect the connectors J408,J409.
3. Remove the 8 blue colored screws Ⓒ Ⓓ fixing the mechanism.
4. Push the cassette button and remove the cassette mechanism block.

NOTE
The cassette mechanism is grounded through the bottom cover, so when checking the operations with the bottom cover removed (especially when checking the signal system), be sure to ground the chassis by using an alligator clip or other suitable gadget. Also, this mechanism is designed for pack sensing, remember that it can not be operated without any tape.

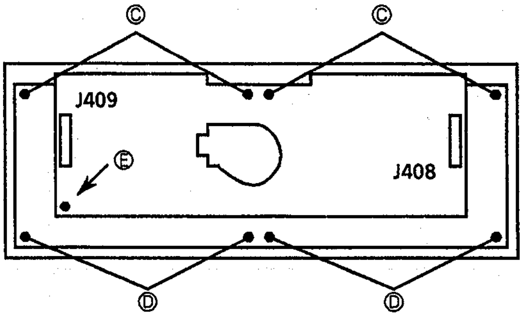


Figure 3 Rear view of the front panel block

■ Cassette holder removal

1. Remove the cassette mechanism from the front panel block.
2. Remove the dampers.
3. Remove the holder spring from the holder bracket.
4. Remove the cassette holder from the holder bracket.

■ System controller PCB removal

1. Remove the front panel block.
2. Remove the screw Ⓔ. and remove the PCB .

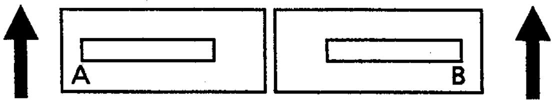


Figure 4 Cassette lids

■ Cassette lid removal

1. Open the doors and slide them in the direction of the arrows.

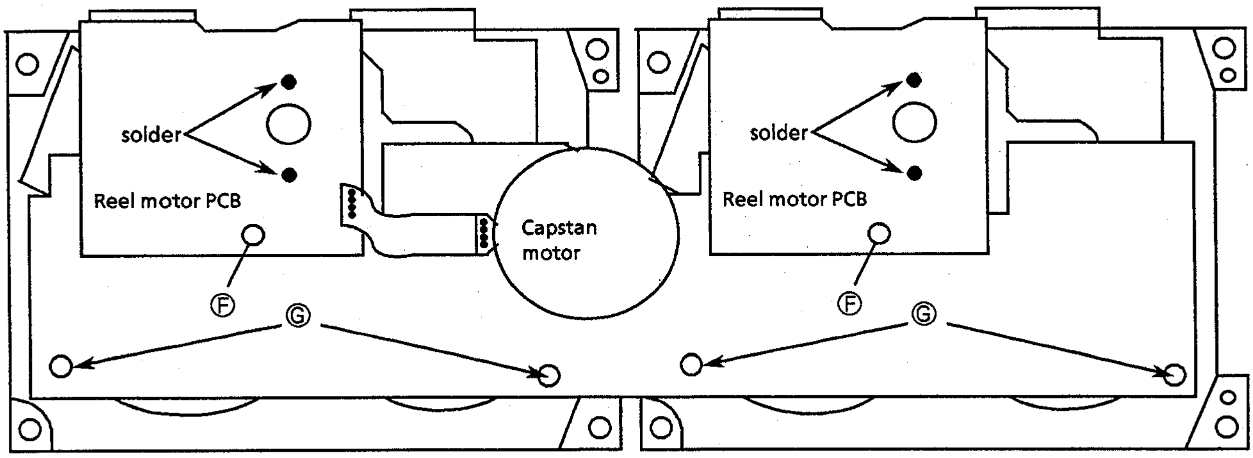


Figure 5 Rear view of the cassette mechanism

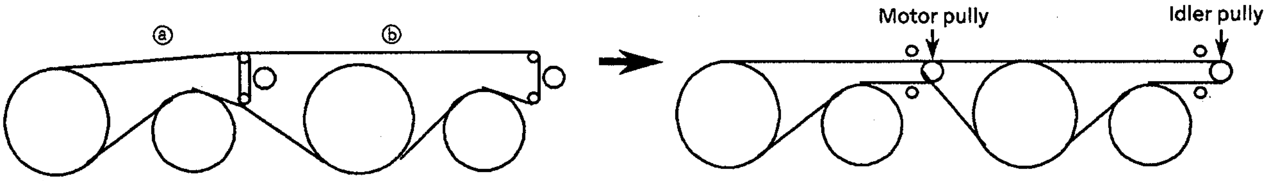


Figure 6 How to put the belts

■ Flywheel removal

1. Remove the mechanism block.
2. Remove the system controller PCB.
3. Remove the reel motor.PCBs.
4. Remove the 4 screws fixing the bracket on which capstan motor is installed.
5. Remove the bracket and the belts.
6. Release the flywheel from the washer .

INSTALL
Install the flywheel and the belts to the mechanism as shown in figure 6. (When putting the belts, put the belt ⓐ first.)
At last, install the bracket with the capstan motor and put the belts on the pullies.

■ CAM switch PCB removal

1. Remove the flywheels.
2. Release the hook fixing the PCB and remove the PCB.

(When installing the CAM switch gears, assemble the PCB so that part Ⓗ meets part Ⓘ.figure7)

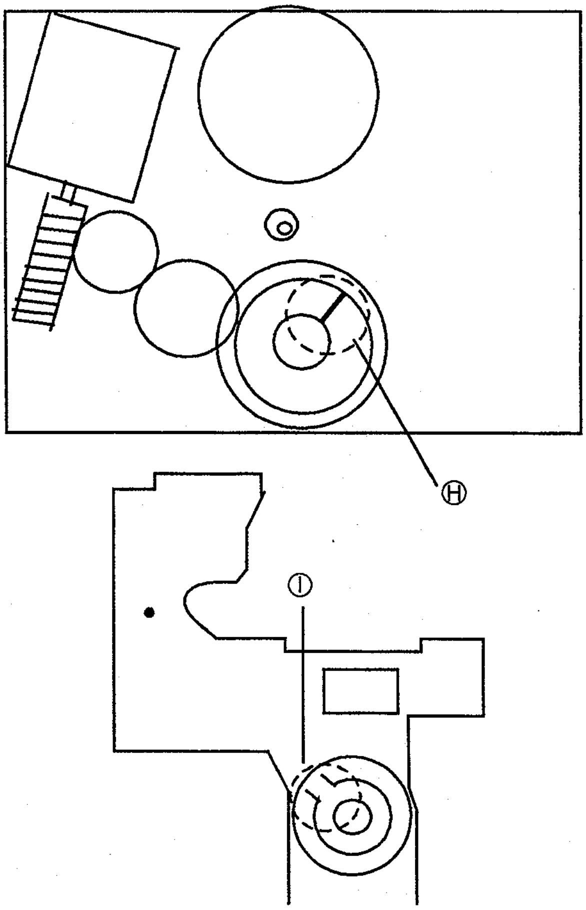


Figure 7 Gear position

Head assembly

1. Remove the cassette mechanism.
2. Unsolder the flexible wire on the relay PCB, and remove the 2 screws fixing the head assembly(Figure 10).

Notice for installing the head assembly
The direction of the head for forward or reverse mode is switched by the cam gear.
The point of the rib for the head assembly installation differs with the head direction.Figure 8 shows the relation of the gears.

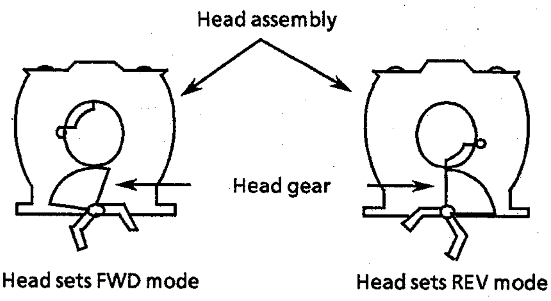

Head assembly
Head gear
Head sets FWD mode
Head sets REV mode

Figure 8 Bottom view of the head assembly

Pinch roller arm assembly removal (FWD / REV)

1. Release the pinch roller return spring from the hook (Figure 10).
2. Remove the hook fixing the pinch roller assembly, and remove the pinch roller assembly (Figure 9).

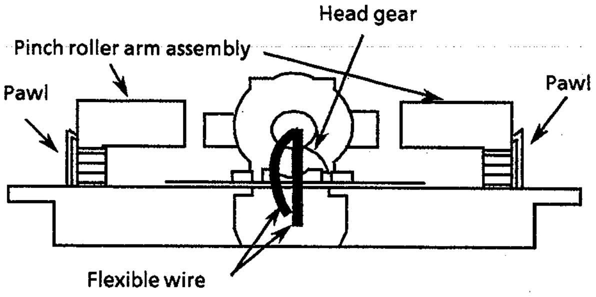

Head gear
Pinch roller arm assembly
Pawl
Pawl
Flexible wire

Figure 9 Bottom view of the cassette mechanism

Reel motor PCB removal

1. Remove the mechanism block.
2. Remove the system controller PCB.
3. Remove the screw fixing the reel motor PCB (Figure 5).
4. Unsolder the reel motor.
5. Remove the PCB.

Reel motor removal

1. Remove the mechanism block.
2. Remove the reel motor PCB.
3. Remove the FR arm assembly (Figure 10).
4. Remove the screws Ⓙ fixing the motor.
5. Release the pawl fixing the motor and remove the motor.

Capstan motor removal

1. Remove the mechanism block.
2. Remove the system controller PCB.
3. Remove the reel motor PCB.
4. Remove the 4 screws Ⓖ fixing the bracket (Figure 5).
5. Release the pawl fixing the bracket and remove the capstan motor with the bracket.
6. Remove the 2 screws fixing the motor on the bracket and remove the motor from the bracket.

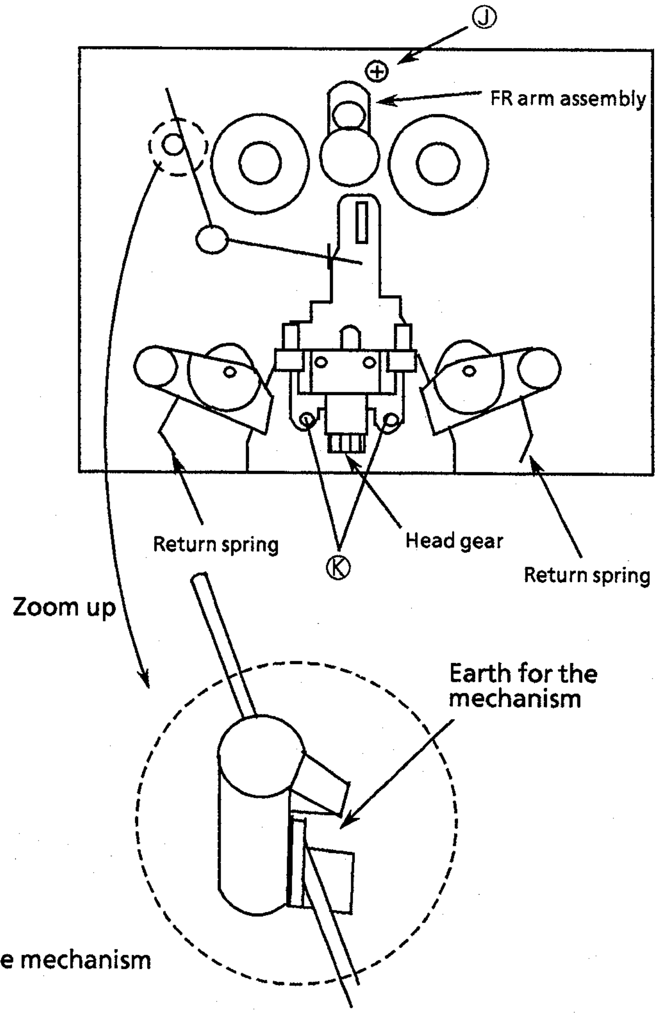

Ⓙ
FR arm assembly
Return spring
Head gear
Ⓚ
Return spring
Zoom up
Earth for the mechanism

Figure 10 Front view of the cassette mechanism

Adjustment Procedures (Cassette Deck)

1. Measuring instruments

Audio frequency signal generator (0dbs output at the 600 ohm output terminal from 50Hz to 20KHz)
Electronic voltmeter
Frequency counter
Wow & Flutter meter
Distortion Meter with band pass filter
Attenuator (600 ohm impedance)
A resistor with 600Ω

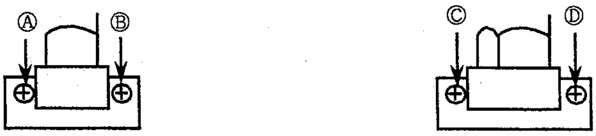
Standard Tape

0dBs = 0.775V

Tape No.	Frequency	Level (Wow & Fkutter)	Purpose
VTT-703L	10kHz	− 10dBs	Head azimuth , Frequency Response
VTT-712	3000Hz	0dBs 0.025%WRMS	Tape Speed , Wow & Flutter
VTT-724	1kHz	− 4dBs	Standard Level
TMT-6447	−	−	Blunk Skip
TMT-6247 , TMT-6237	−	−	Music Scan
TMT-7046	−	−	Recording standard Normal : UR
AC-712	−	−	Recording standard METAL :MA
AC-513	−	−	Recording standard CrO_2 : SA
TW-2111, TW-2121	−	−	Forward / reverse play torque measuring
TW-2231	−	−	Feed forward / rewind torque measuring
C-120 Tape	−	−	Comfirming the tape running

2. Adjustment and repairing the mechanism

Item	Adjustment method	Standard value	Remarks
Head azimuth	Deck A 1. Connect an electronic voltmeter to the DOLBY TP(figure 3) to playback VTT-703L. 2. Adjust screw Ⓐ so that the indication of the voltmeter becomes maximum when PLAY (▶) is pressed. 3. Adjust screw Ⓑ so that the indication of the voltmeter becomes maximum when PLAY (◀) is pressed. Deck B 4. Adjust screw Ⓒ so that the indication of the voltmeter becomes maximum when PLAY (▶) is pressed. 5. Adjust screw Ⓓ so that the indication of the voltmeter becomes maximum when PLAY (◀) is pressed. 6. After making the adjustment,apply screw lock to prevent screws Ⓐ , Ⓑ , Ⓒ and Ⓓ coming loose .	Maximum	1. **Refer to figure 1.** 2. When the specified characteristic cannot be obtained because of head wear, excessive magnetization, etc., replace the head assembly and adjust the head azimuth. Also, perform the electric adjustment. 3. When there is the difference of more than 3 ~ 4 dB between left and right output levels, replace the head assembly to avoid complaints.
Playback torque	1. Measure the torque in the playback mode by the torqu meter.	26 ~ 67 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Fast forward torque	1. Measure the torque in the fast forward mode by the torqu meter.	80 ~ 200 g-cm	When the standard torque cannot be obtained,replace the FR arm assembly or motor.
Rewind torque	1. Measure the torque in the rewind mode by the torqu meter.	80~ 200 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Wow & flutter	1. Connect the wow & flutter meter to the DOLBY TP(figure 3) and play back VTT-712 . 2. Its reading should be within 0.2% (WTD).	Less than 0.2%	As a complaint may occur if the wow & flutter fluctuates by 0.1% even though it is allowed in the standard, repairing is required.



Deck A

Deck B

Figure 1

3. Electrical Adjustments (Make the following adjustments after adjusting the head azimuth.)

In principle, the adjustments should be made in the following sequence.
Set the NR switch to OFF and the BEAT CUT switch to "1".
Adjustments marked with an asterisk (*) should always be made after the head is replaced **0dBs = 0.775V.**

	Item	Adjustment Method	Adjustment Location	Standard Value	Remarks
1	Tape Speed	1. Connect a frequency counter to the DOLBY TP(figure 3) and play back VTT-712. 2. Normal speed Adjustment 1) Mechanism B Play back deck B to adjust the semi-fixed resistor VR451 on ENJ-069-2. 2) Mechanism A Play back deck A to confirm that the difference between deck A and deck B is within ±51Hz. 3. High-speed adjustment 1) Mechanism B Play back deck B and adjust the semi-fixed resistor VR452 on ENJ-069-2.	VR451 VR452	3,000 Hz ±10Hz 6,000Hz ±20Hz	1) Adjust the normal speed first, and perform the high speed adjustment.
* 2	Standard level (Playback Level)	1. Connect an electronic voltmeter to the DOLBY TP (figure 3). Play back VTT-724 (1 kHz: −4dBs) to adjust the semi-fixed resistors.	**Deck A** L: VR111 R: VR112 **Deck B** L: VR141 R: VR142	−5.5dBs (411mV) ±1dB	1) The playback level varies when the head is replaced so should be adjusted. Use an electronic voltmeter with an impedance of 100 kΩ or more.
* 3	Playback Frequency Response	1. Connect an electronic voltmeter to the DOLBY TP (figure 3). 2. Play VTT-703L (10kHz: −10dBs) and adjust semi-fixed resistors to obtain the standard values.	**Deck A** L: VR113 R: VR114 **Deck B** L: VR143 R: VR144	−11.5dBs (206mV) ±3dB	—
* 4	Recording Bias Frequency	1. Connect a frequency counter to the BIAS TP(figure 3), and perform a recording to adjust bias frequency.	L351	100 kHz ±5 kHz	Set the BEAT CUT SWITCH to "1".
* 5	Record / Play Frequency Response (Bias current)	1. Supply 1kHz and 12.5kHz with 30mV signals to VCR/DAT terminals respectively. to record them. 2. Connect an electronic voltmeter to the DOLBY TP (figure 3) to confirm the values. 3. If the values are not satisfied, adjust the semi-fixed resistors and record the signal again to confirm the values.	L: VR361 R: VR362	0±3 dB for 12.5 kHz with 1 kHz as the standard.	**Refer to figure 2 below.** 1) The recording and playback frequencies of a cassette deck are adjusted by adjusting the bias. 2) Perform the adjustment with normal tape and confirm that the values are within the range for metal tape.

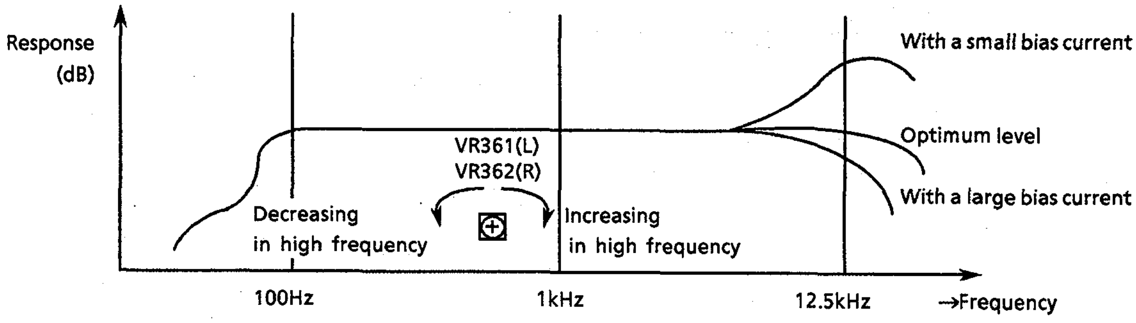
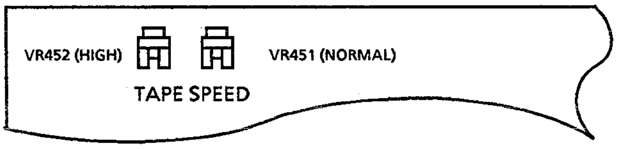


Figure 2

	Item	Adjustment Method	Adjustment Location	Standard Value	Remarks
* 6	Record / Playback Sensitivity	1. Input a 1 kHz (−8.2dBs: 300mV) signal to VCR / DAT terminals and record it on the left and right channels . 2. Connect an electronic voltmeter to the DOLBY TP (figure 3) to confirm the values. 3. If the values are not satisfied, adjust the semi-fixed resistors and record the signal again to confirm the values.	L : VR185 R : VR186	−5.5dBs (411mV)	Adjust with normal tape and make sure that the left / right level difference is 1.0dB or less
7	Erase ratio check	1. Record a music source using the Metal tape. 2. Rewind and erase the recorded section. 3. Comfirm nothing can be heard.	−	−	−
8	Auto-stop check	1. Make sure to operate AUTO STOP at the end of tape running and not to operate on the way of the playing.	−	−	−
9	Music Scan	1. Make sure not to work the music scanning operation at the start of tape wind. 2. Make sure to work the music scanning operation at the end of tape wind.	−	−	−

Mechanism controller PCB (ENJ-069-2)


VR452 (HIGH)
VR451 (NORMAL)
TAPE SPEED

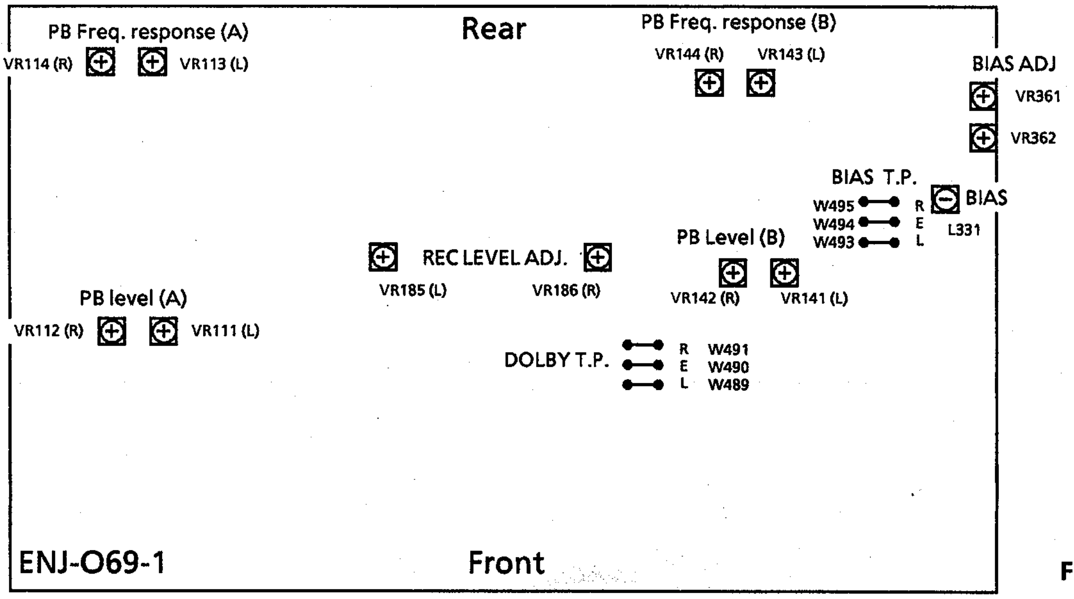
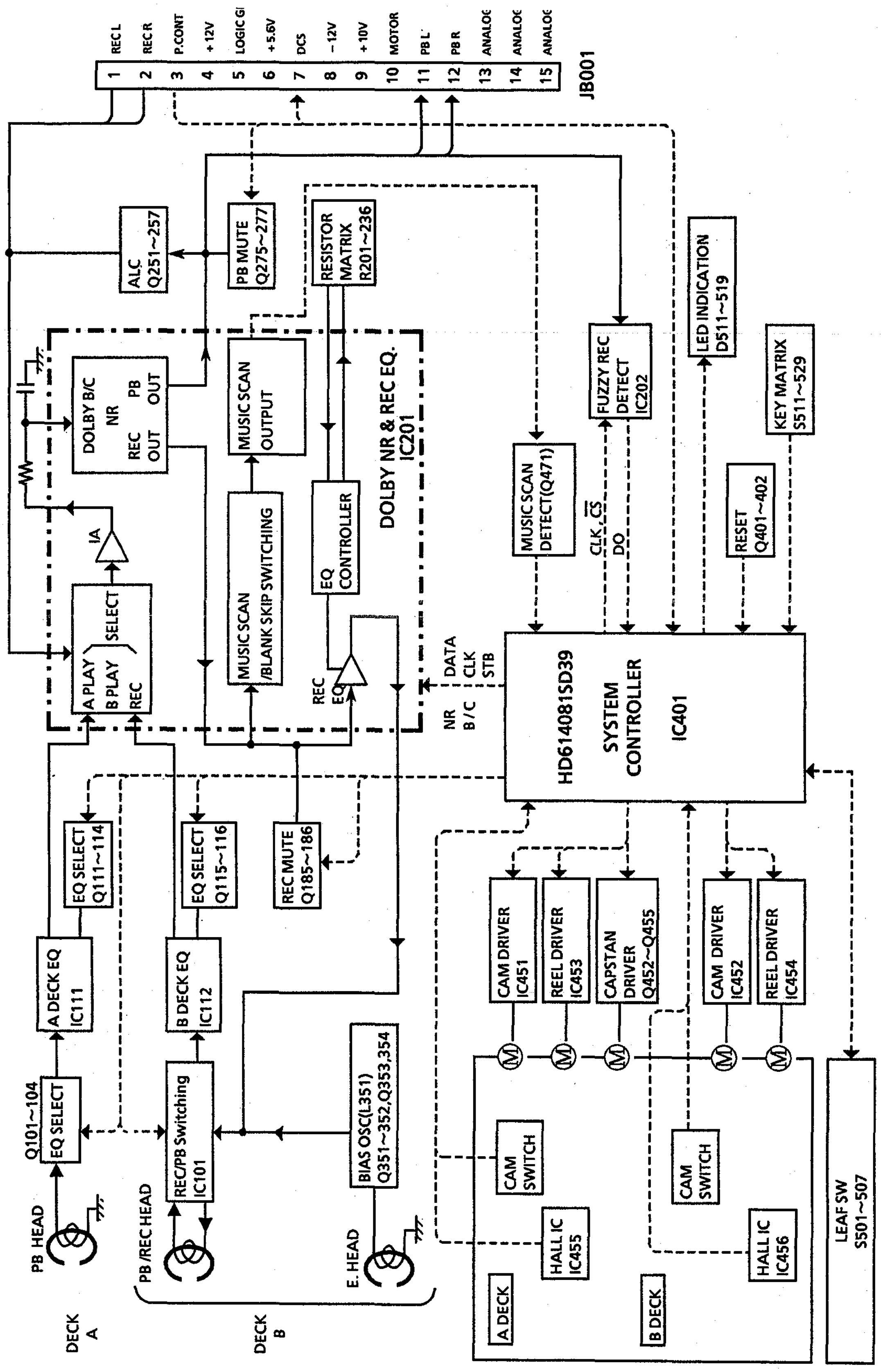
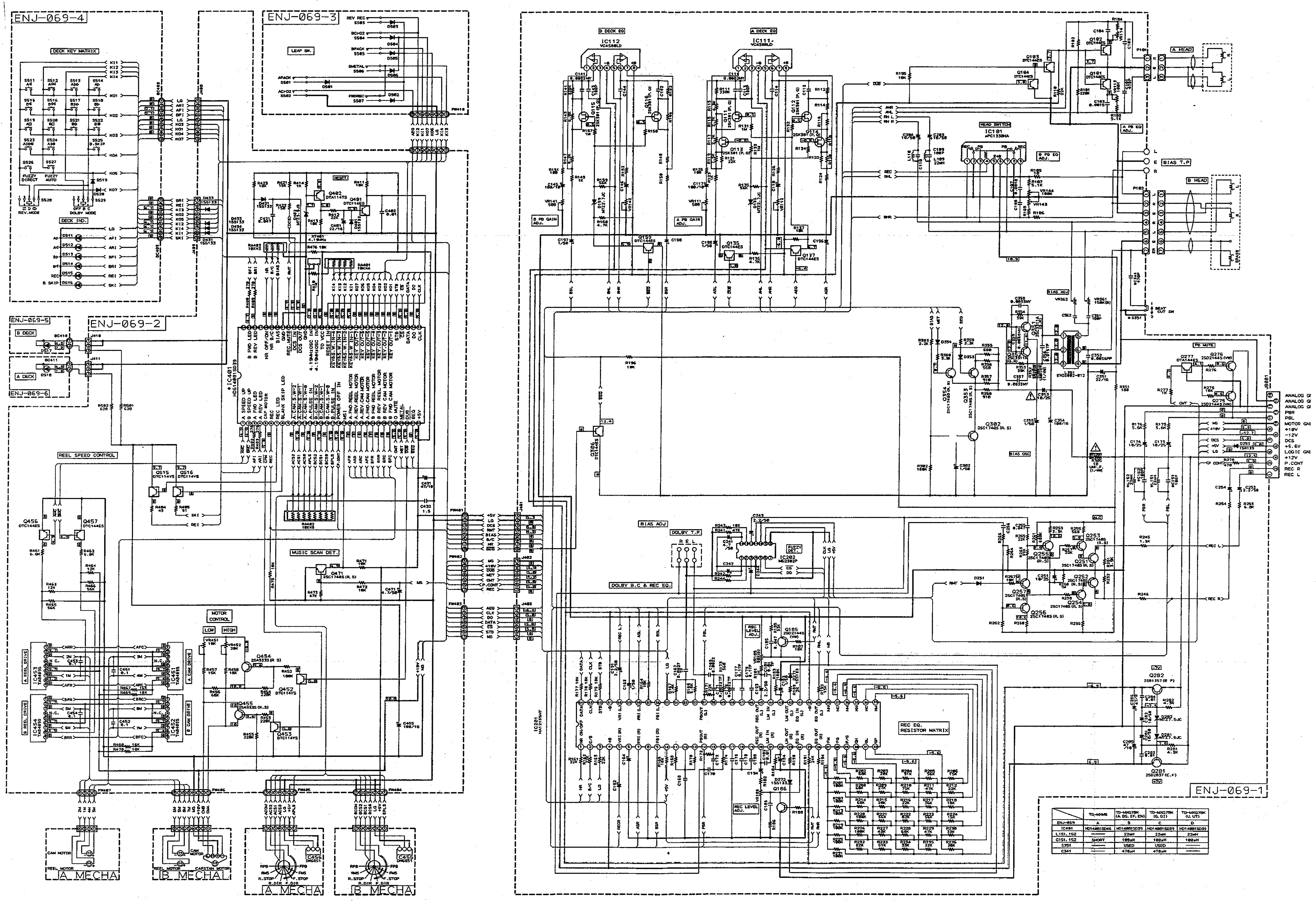

PB Freq. response (A)
VR114 (R)
VR113 (L)
Rear
PB Freq. response (B)
VR144 (R)
VR143 (L)
BIAS ADJ
VR361
VR362
BIAS T.P.
W495
W494
W493
R
E
L
BIAS
L331
PB Level (B)
REC LEVEL ADJ.
VR185 (L)
VR186 (R)
VR142 (R)
VR141 (L)
PB level (A)
VR112 (R)
VR111 (L)
DOLBY T.P.
R
E
L
W491
W490
W489
ENJ-O69-1
Front

Figure 3

Block Diagram


JB001
1 REC L
2 REC R
3 P.CONT
4 +12V
5 LOGIC GI
6 +5.6V
7 DCS
8 −12V
9 +10V
10 MOTOR
11 PB L
12 PB R
13 ANALOG
14 ANALOG
15 ANALOG
ALC Q251~257
PB MUTE Q275~277
RESISTOR MATRIX R201~236
DOLBY B/C NR
REC OUT
PB OUT
MUSIC SCAN OUTPUT
A PLAY
B PLAY
REC
SELECT
IA
MUSIC SCAN /BLANK SKIP SWITCHING
EQ CONTROLLER
REC EQ
DOLBY NR & REC EQ. IC201
MUSIC SCAN DETECT(Q471)
FUZZY REC DETECT IC202
LED INDICATION D511~519
KEY MATRIX S511~529
RESET Q401~402
CLK, CS
DO
DATA
CLK
STB
NR
B/C
HD614081SD39
SYSTEM CONTROLLER
IC401
EQ SELECT Q111~114
EQ SELECT Q115~116
REC MUTE Q185~186
A DECK EQ IC111
B DECK EQ IC112
EQ SELECT Q101~104
REC/PB Switching IC101
BIAS OSC(L351) Q351~352,Q353,354
PB HEAD
PB /REC HEAD
E. HEAD
DECK A
DECK B
CAM DRIVER IC451
REEL DRIVER IC453
CAPSTAN DRIVER Q452~Q455
CAM DRIVER IC452
REEL DRIVER IC454
M
CAM SWITCH
HALL IC IC455
CAM SWITCH
HALL IC IC456
A DECK
B DECK
LEAF SW S501~507


ENJ-069-4
DECK KEY MATRIX
DECK IND.
ENJ-069-3
LEAF SW.
ENJ-069-5
B DECK
A DECK
ENJ-069-6
ENJ-069-2
RESET
REEL SPEED CONTROL
MUSIC SCAN DET.
MOTOR CONTROL
LOW
HIGH
A REEL DRIVE
A CAM DRIVE
B REEL DRIVE
B CAM DRIVE
A MECHA
B MECHA
CAM MOTOR
REEL MOTOR
CAPSTAN MOTOR
B DECK EQ
A DECK EQ
IC112
IC111
HEAD SWITCH
IC101
A HEAD
B HEAD
BIAS T.P.
B PB GAIN ADJ.
A PB GAIN ADJ.
BIAS ADJ
BIAS OSC
PB MUTE
DOLBY T.P.
DOLBY B.C & REC EQ.
REC LEVEL ADJ.
REC EQ. RESISTOR MATRIX
ANALOG GND
PBR
PBL
MOTOR GND
+18V
-12V
DCS
+5.6V
LOGIC GND
+12V
P.CONT
REC R
REC L
ENJ-069-1

	TD-MX45	TD-MXG7BK (A, BS, EF, EN)	TD-MXG7BK (G, GI)	TD-MXG7BK (U, UT)
ENJ-069	A	B	C	D
IC401	HD14081SD46	HD14081SD39	HD14081SD39	HD14081SD39
L151, 152	——	22mH	22mH	22mH
C151, 152	SHORT	100µH	100µH	100µH
S351	——	USED	USED	——
C341	——	470µH	470µH	——

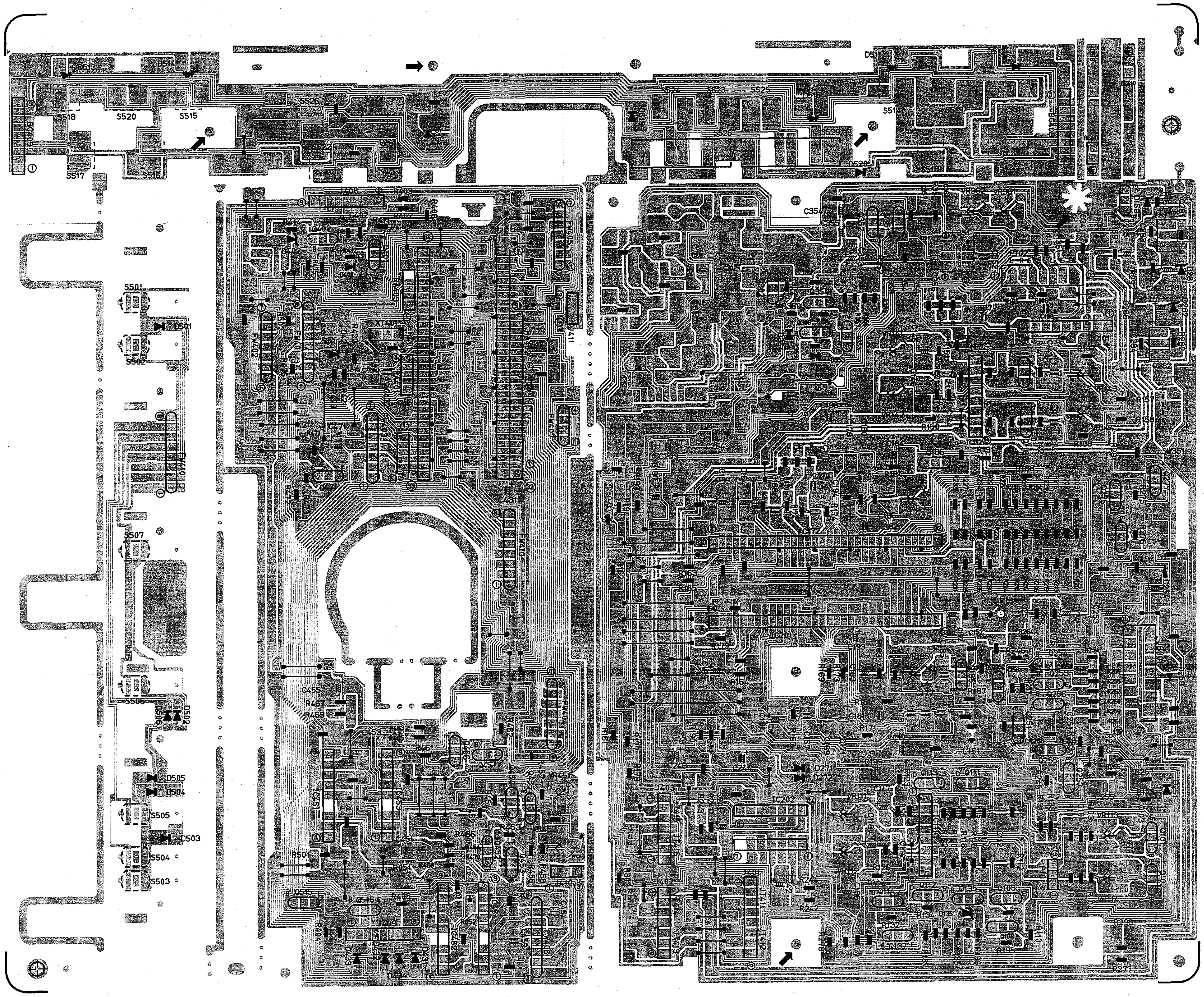
Notes:

1. ═══ indicates +B power supply
2. - - - - indicates −B power supply.
3. indicates main signal path.
4. When replacing the parts in the shaded are (▨) and those marked with ⚠, be sure to use the designated parts to ensure safety.
5. The design and contents are subject to change without notice.

(No. 20395)

Printed Circuit Board

- **ENJ-069**



(No. 20395) (No. 20395)

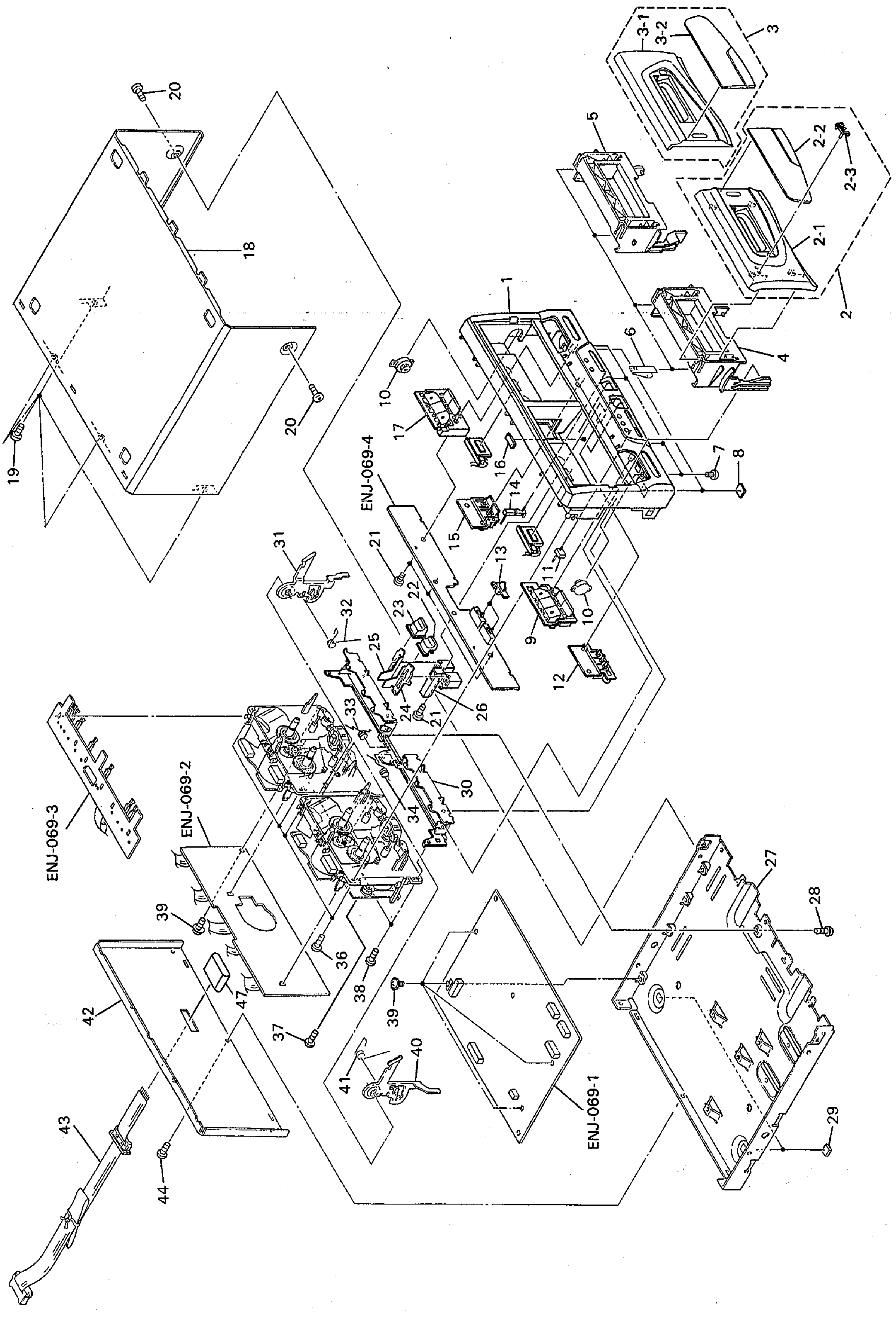
PARTS LIST

Note : All printed circuit boards and its assemblies are not available as service parts.

Contents

General Exploded View and Parts List 2-3
Cassette Mechanism Ass'y and Parts List 2-5
Printed Circuit Board Ass'y and Parts List 2-8
■ENJ-069☐ Cassette PC Board Ass'y 2-8

General Exploded View and Parts List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ENJ-069-4
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ENJ-069-3
ENJ-069-2
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ENJ-069-1
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Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	E102632-005	FRONT PANEL	1		
	2	E102637-002SA	CASSETTE LID ASSY	1	A	
	2-1	E102637-002	CASSETTE LID	1	A	
	2-2	E308209-001	CASSETTE LENS	1	A	
	2-3	E406971-221	JVC MARK	1	A	
	3	E102639-003SA	CASSETTE LID ASSY	1	B	
	3-1	E102639-003	CASSETTE LID	1	B	
	3-2	E308211-001	CASSETTE LENS	1	B	
	4	E207642-001	CASSETTE HOLDER	1	A	
	5	E207643-001	CASSETTE HOLDER	1	B	
	6	E406713-001	CASSETE SPRING	4		
	7	SBST3006M	SCREW	4		
	8	E406855-008	SPACER	2	FRONT FOOT	
	9	E207648-001	PUSH BUTTON ASSY	1		
	10	E304434-003	DAMPER ASSY	2		
	11	E407241-001	INDICATOR	1		
	12	E207654-001	PUSH BUTTON	1		
	13	E407239-001	SLIDE KNOB	2		
	14	E407242-001	INDICATOR	1		
	15	E207655-002	PUSH BUTTON	1		
	16	EXO010005A03S14	SPACER	2		
	17	E207651-001	PUSH BUTTON ASSY	1		
	18	E207591-002	METAL COVER	1		
	19	E73273-003	SPECIAL SCREW	4		
	20	SDSG3008M	SCREW	2		
	21	SDSF2608Z	SCREW	4		
	22	E308205-001	EJECT BUTTON	1	A	
	23	E308207-001	EJECT BUTTON	1	B	
	24	E407237-001	PUSH PLATE	1	A	
	25	E407238-001	PUSH PLATE	1	B	
	26	E308204-002	EJECT GUIDE	1		
	27	E102462-001	CHASSIS BASE	1		
	28	SBST3006Z	SCREW	1		
	29	E406855-005	SPACER	2	REAR FOOT	
	30	E207641-002	HOLDER BRACKET	1		
	31	E308203-001	EJECT LEVER	1	B	
	32	E406670-001	EJECT SPRING	1	B	
	33	E407325-001	HOLDER SPRING	1	B	
	34	E407324-001	HOLDER SPRING	1	A	
	35	––––––	CASSETTE MECHANISM ASSY	1	SEE PAGE 2-5	
	36	SBSF3010C	SCREW	4		
	37	E65923-001	SPECIAL SCREW	1		
	38	SBST3008C	SCREW	4		
	39	GBSG3008CC	SCREW	5		
	40	E308202-001	EJECT LEVER	1		
	41	E406669-001	EJECT SPRING	1		
	42	E207639-005	REAR PANEL	1		A
		E207639-005	REAR PANEL	1		BS
		E207639-005	REAR PANEL	1		EF
		E207639-005	REAR PANEL	1		EN
		E207639-005	REAR PANEL	1		G
		E207639-005	REAR PANEL	1		GI
		E207639-003	REAR PANEL	1		U
		E207639-003	REAR PANEL	1		UT
	43	EWP907-003	PLUG CORD ASSY	1		Except G, GI

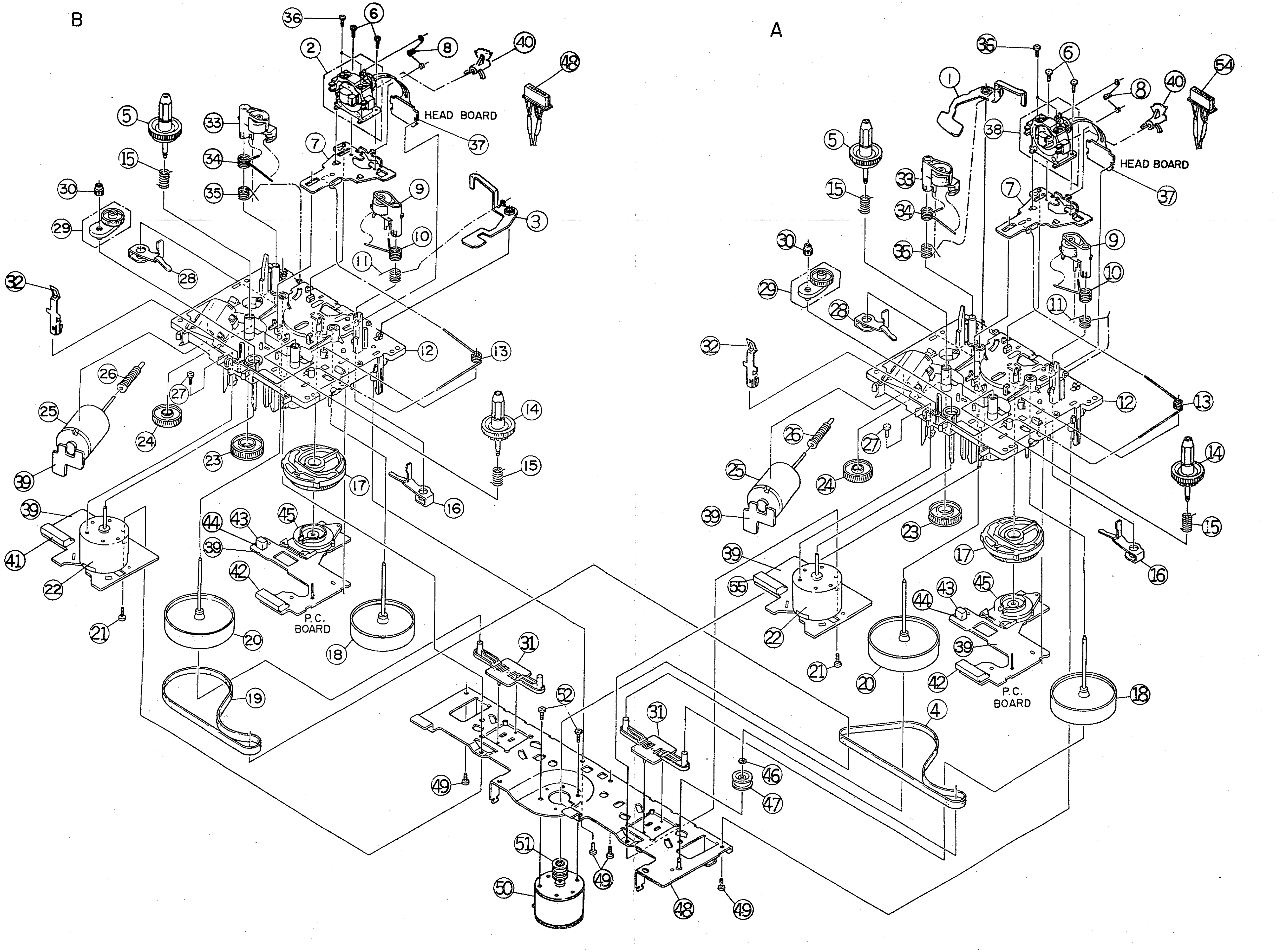
⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	43	EWP907-013	PLUG CORD ASSY	1		Except G, GI
	44	SBSG3008CC	SCREW	1		
	45	E60912-003	SPEED NUT	2		
	46	E73967-010	SPACER	1		
	47	EN28104-001	CAMP FILTER	1		G,GA
	–	E61029-005	NUMBER LABEL	1		

⚠ SAFETY PARTS

The Marks for Designated Areas

A	Australia	EN	Scandinavia	EF	Continental Europe
BS	the U.K.	G	Germany	GI	Itary
UT	Taiwan	U	Universal Type	No mark indicates all areas.	

Cassette Mechanism Ass'y and Parts List


B
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HEAD BOARD
HEAD BOARD
P.C. BOARD
P.C. BOARD
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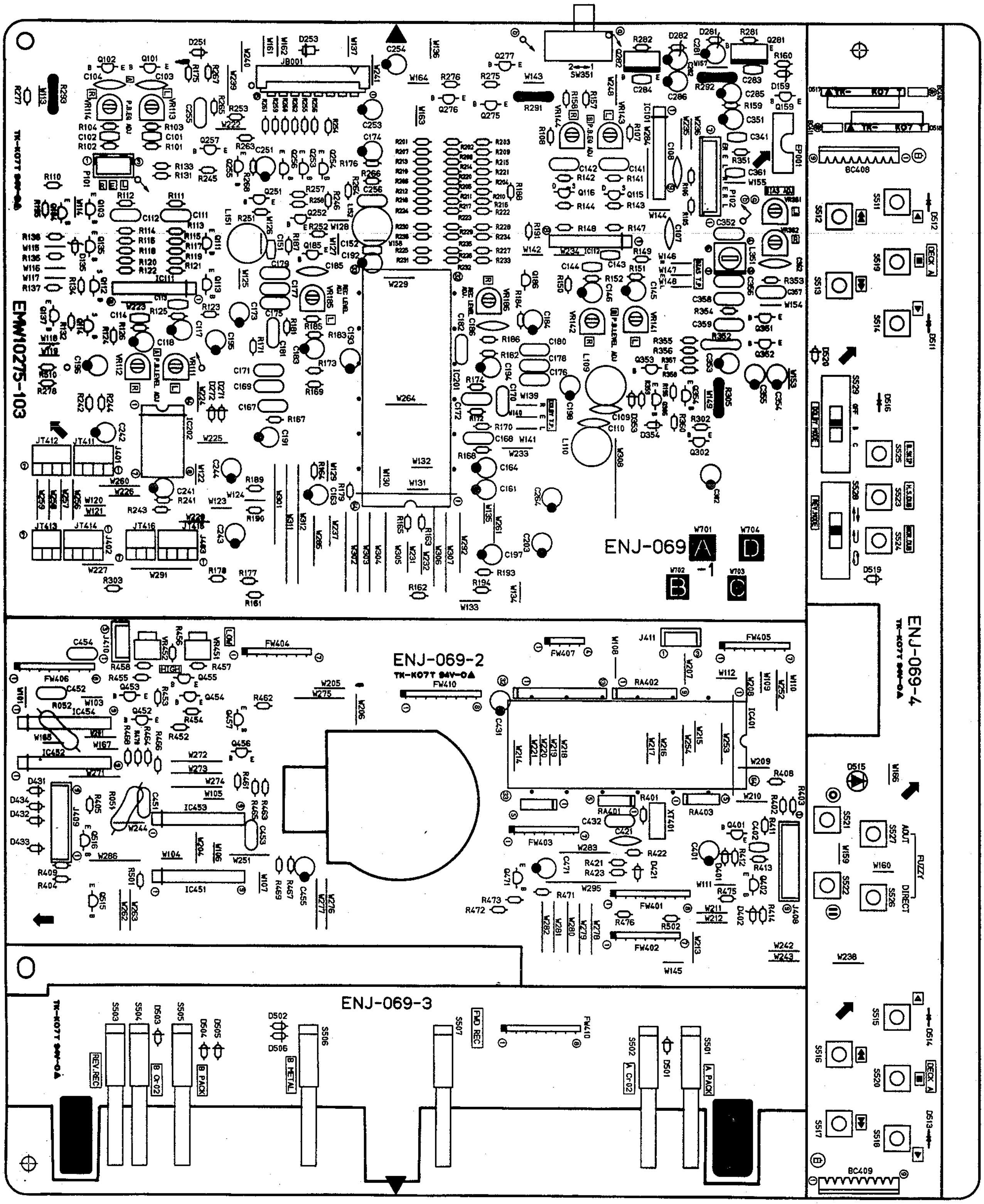
■ Parts List (Cassette Mechanism)

Item	Part Number	Part Name	Q'ty	Description	Areas
1	VKL6954-007	EJECT SAFETY LEVER	1	A MECHANISM	
2	VKS3551-00C	HEAD BLOCK ASSY	1	B MECHANISM	
3	VKL6943-005	EJECT SAFETY LEVER	1	B MECHANISM	
4	VKB3001-050	CAPSTAN BELT	1	A MECHANISM	
5	VKS5321-00D	REEL ASSY	2	RIGHT	
6	SDST2004Z	SCREW	4	FOR HEAD MOUNT ASSY	
7	VKL6942-00E	HEAD BASE ASSY	2		
8	VKW4994-001	HEAD SPRING	2		
9	VKP4221-00C	PINCH ROLLER ASSY	2	LEFT	
10	VKW4982-001	TORSION SPRING	2	LEFT	
11	VKW4933-005	TORSION SPRING	2	LEFT	
12	VKS1112-30E	CHASSIS BASE ASSY	2		
13	VKW4930-002	RETURN SPRING	2		
14	VKS3480-005	REEL ASSY	2	LEFT	
15	VKW4928-003	B.T SPRING	4	FOR REEL ASSY	
16	VKL6940-002	PINCH ROLLER LEVER	2	LEFT	
17	VKS2209-006	CONTROLLER CAM	2		
18	VKF3186-00C	FLYWHEEL ASSY	2	LEFT	
19	VKB3001-048	CAPSTAN BELT	1	B MECHANISM	
20	VKF3184-00C	FLYWHEEL ASSY	2	RIGHT	
21	SDSF2608Z	SCREW	2	PC BOARD - FM BRACKET	
22	MMN-6F4RA38	DC MOTOR	2	REEL	
23	VKS5331-002	GEAR (6)	2		
24	VKS5330-004	GEAR (5)	2		
25	MXN-13FB12F	DC MOTOR	2	CAM	
26	VKS5329-002	GEAR (4)	2		
27	SDSP2605Z	SCREW	2	CHASSIS BASE - D.C. MOTOR	
28	VKL6939-002	PINCH ROLLER LEVER	2	RIGHT	
29	VKS5325-00F	FR ARM ASSY	2		
30	VKS5328-002	REEL MOTOR GEAR	2		
31	VKS5327-003	THRUST PALTE	2		
32	VKY4628-002	PACK SPRING	2		
33	VKP4219-00C	PINCH ROLLER ASSY	2	RIGHT	
34	VKW4981-001	TORSION SPRING	2	RIGHT	
35	VKW4932-005	TORSION SPRING	2	RIGHT	
36	VKZ4629-003	SCREW	4		
37	VMW4816-001	PRINTED BOARD	2		
38	VKS3550-00C	HEAD MOUNT ASSY	1	A MECHANISM	
39	VMW2345-002	PRINTED BOARD	2		
40	VKS3485-002	HEAD BLOCK GEAR	2		
41	VMC0249-R08	CONNECTOR	1	B MECHANISM	
42	VMC0249-R07	CONNECTOR	2		
43	DN6851A	HALL IC	2		
44	VKS3487-002	IC HALL	2		
45	VKS3587-00A	CAM SWITCH ASSY	2		
46	WDL163525-4	WASHER	1		
47	VKR4631-002	IDLER PULLEY	1		
48	VKM3419-00E	FM BRACKET	1		
49	SDSF2605Z	SCREW	4	CHASSIS BASE - BRACKET	
50	MMI-6H2LWSK	MOTOR	1	CAPSTAN	
51	VKR4632-003	MOTOR PULLEY	1		
52	SPSP2603Z	SCREW	2		
53	VDM107P-040	HEAD WIRE	1	B MECHANISM	
54	VDM103P-040	HEAD WIRE	1	A MECHANISM	
55	VMC0249-R04	CONNECTOR	1	A MECHANISM	

Printed Circuit Board Ass'y and Parts List

■ENJ-069 Cassette PC Board Ass'y

Note : ENJ-069 □ varies according to the areas employed. See note (1) when placing an order.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ENJ-069-3
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L351
DOLBY MODE
REV MODE
H.S.DUB
NOR.DUB
R.SKIP
HIGH
LOW
REV.REC
B Cr02
B PACK
B METAL
FWD REC
A Cr02
A PACK
DECK A
ADJT
DIRECT
FUZZY
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D520

Note (1)

PC Board Ass'y	Designated Areas
ENJ-069 B	Australia the U.K. Continental Europe Scandinavia
ENJ-069 C	Germany Italy
ENJ-069 D	Universal Type Taiwan

TRANSISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q101	DTC144ES	SILICON ROHM	
	Q102	DTC144ES	SILICON ROHM	
	Q103	DTC144ES	SILICON ROHM	
	Q104	DTC144ES	SILICON ROHM	
	Q111	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q112	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q113	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q114	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q115	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q116	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q135	DTC144ES	SILICON ROHM	
	Q137	DTC144ES	SILICON ROHM	
	Q159	DTC144ES	SILICON ROHM	
	Q185	2SD2144S(VW)	SILICON ROHM	
	Q186	2SD2144S(VW)	SILICON ROHM	
	Q251	2SC1740S(R,S)	SILICON ROHM	
	Q252	2SC1740S(R,S)	SILICON ROHM	
	Q253	2SC1740S(R,S)	SILICON ROHM	
	Q254	2SC1740S(R,S)	SILICON ROHM	
	Q255	2SC1740S(R,S)	SILICON ROHM	
	Q256	2SC1740S(R,S)	SILICON ROHM	
	Q257	2SC1740S(R,S)	SILICON ROHM	
	Q275	2SD2144S(VW)	SILICON ROHM	
	Q276	2SD2144S(VW)	SILICON ROHM	
	Q277	DTA144ES	SILICON ROHM	
	Q281	2SD2037(E,F)	SILICON ROHM	
	Q282	2SB1357(E,F)	SILICON ROHM	
	Q302	2SC1740S(R,S)	SILICON ROHM	
	Q306	DTC144ES	SILICON ROHM	
	Q351	2SC3311A(Q,R)	SILICON MATSUSHITA	
	Q352	2SC3311A(Q,R)	SILICON MATSUSHITA	
	Q353	2SC1740S(R,S)	SILICON ROHM	
	Q354	2SC1740S(R,S)	SILICON ROHM	
	Q401	DTC114ES	SILICON ROHM	
	Q402	DTA114TS	SILICON ROHM	
	Q452	DTC114YS	SILICON ROHM	
	Q453	DTC114YS	SILICON ROHM	
	Q454	2SA933S(R,S)	SILICON ROHM	
	Q455	2SA933S(R,S)	SILICON ROHM	
	Q456	DTC144ES	SILICON ROHM	
	Q457	DTC144ES	SILICON ROHM	
	Q471	2SC1740S(R,S)	SILICON ROHM	
	Q515	DTC114YS	SILICON ROHM	
	Q516	DTC114YS	SILICON ROHM	

⚠ : SAFETY PARTS

I. C. S.

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC101	UPC1330HA	I.C. NEC	
	IC111	VC4580LD	I.C. DAINICHI	
	IC112	VC4580LD	I.C. DAINICHI	
	IC201	HA12155NT	I.C. HITACHI	
	IC202	M62302P	I.C. MITSUBISHI	
	IC401	HD614081SD39	I.C. HITACHI	
	IC451	TA8409S	I.C. TOSHIBA	
	IC452	TA8409S	I.C. TOSHIBA	
	IC453	TA8409S	I.C. TOSHIBA	
	IC454	TA8409S	I.C. TOSHIBA	

⚠ : SAFETY PARTS

DIODES

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D135	MTZ2.7JB	ZENER ROHM	
	D159	MTZ2.7JB	ZENER ROHM	
	D251	1SS119	SILICON HITACHI	
	D253	1SR35-200A	SILICON ROHM	
	D271	1SS119	SILICON HITACHI	
	D272	1SS119	SILICON HITACHI	
	D281	MTZ7.5JC	ZENER ROHM	
	D282	MTZ7.5JC	ZENER ROHM	
	D353	1SS119	SILICON HITACHI	
	D354	1SS119	SILICON HITACHI	
	D401	1SS119	SILICON HITACHI	
	D402	MTZ3.9JB	ZENER ROHM	
	D421	1SS119	SILICON HITACHI	
	D431	1SS119	SILICON HITACHI	
	D432	1SS119	SILICON HITACHI	
	D433	1SS119	SILICON HITACHI	
	D434	1SS119	SILICON HITACHI	
	D501	1SS119	SILICON HITACHI	
	D502	1SS119	SILICON HITACHI	
	D503	1SS119	SILICON HITACHI	
	D504	1SS119	SILICON HITACHI	
	D505	1SS119	SILICON HITACHI	
	D506	1SS119	SILICON HITACHI	
	D511	SLR-342MCA47	L.E.D. ROHM	
	D512	SLR-342MCA47	L.E.D. ROHM	
	D513	SLR-342MCA47	L.E.D. ROHM	
	D514	SLR-342MCA47	L.E.D. ROHM	
	D515	SLH-34VC50F124	L.E.D. ROHM	
	D516	SLR-342VC3F	L.E.D. ROHM	
	D517	LD-702MG	L.E.D. ROHM	
	D518	LD-702MG	L.E.D. ROHM	
	D519	1SS119	SILICON HITACHI	
	D520	1SS119	SILICON HITACHI	

⚠ : SAFETY PARTS

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C101	QCBB1HK-471	470PF 50V CERAMIC	
	C102	QCBB1HK-471	470PF 50V CERAMIC	
	C103	QCY21HK-152	1500PF 50V CERAMIC	
	C104	QCY21HK-152	1500PF 50V CERAMIC	
	C107	QCY21HK-182	1800PF 50V CERAMIC	
	C108	QCY21HK-182	1800PF 50V CERAMIC	
	C109	QCS21HJ-101	100PF 50V CERAMIC	
	C110	QCS21HJ-101	100PF 50V CERAMIC	
	C111	QFLB1HJ-822	8200PF 50V MYLAR	
	C112	QFLB1HJ-822	8200PF 50V MYLAR	
	C113	QCBB1HK-101	100PF 50V CERAMIC	
	C114	QCBB1HK-101	100PF 50V CERAMIC	
	C117	QEK51CM-107	100MF 16V ELECTRO	
	C118	QETB1CM-107	100MF 16V ELECTRO	
	C141	QFLB1HJ-822	8200PF 50V MYLAR	
	C142	QFLB1HJ-822	8200PF 50V MYLAR	
	C143	QCBB1HK-101	100PF 50V CERAMIC	
	C144	QCBB1HK-101	100PF 50V CERAMIC	
	C145	QETB1AM-107	100MF 10V ELECTRO	
	C146	QETB1AM-107	100MF 10V ELECTRO	
	C151	QCBB1HK-101	100PF 50V CERAMIC	
	C152	QCBB1HK-101	100PF 50V CERAMIC	
	C161	QETB1AM-107	100MF 10V ELECTRO	
	C163	QETB1HM-105	1MF 50V ELECTRO	
	C164	QETB1HM-105	1MF 50V ELECTRO	
	C167	QFLB1HJ-272	2700PF 50V MYLAR	
	C168	QFLB1HJ-272	2700PF 50V MYLAR	
	C169	QFLB1HJ-222	2200PF 50V MYLAR	
	C170	QFLB1HJ-222	2200PF 50V MYLAR	
	C171	QFLB1HJ-222	2200PF 50V MYLAR	
	C172	QFLB1HJ-222	2200PF 50V MYLAR	
	C173	QETB1EM-106	10MF 25V ELECTRO	
	C174	QETB1EM-106	10MF 25V ELECTRO	
	C175	QFLB1HJ-222	2200PF 50V MYLAR	
	C176	QFLB1HJ-222	2200PF 50V MYLAR	
	C177	QFV81HJ-104	0.1MF 50V T.FILM	
	C178	QFV81HJ-104	0.1MF 50V T.FILM	
	C179	QFV81HJ-104	0.1MF 50V T.FILM	
	C180	QFV81HJ-104	0.1MF 50V T.FILM	
	C181	QFLB1HJ-103	0.01MF 50V MYLAR	
	C182	QFLB1HJ-103	0.01MF 50V MYLAR	
	C183	QETB1HM-105	1MF 50V ELECTRO	
	C184	QETB1HM-105	1MF 50V ELECTRO	
	C185	QCF21HP-473	0.047MF 50V CERAMIC	
	C186	QCF21HP-473	0.047MF 50V CERAMIC	
	C191	QETB1HM-225	2.2MF 50V ELECTRO	
	C192	QETB1HM-225	2.2MF 50V ELECTRO	
	C193	QETB1HM-225	2.2MF 50V ELECTRO	
	C194	QETB1HM-225	2.2MF 50V ELECTRO	
	C195	QETB1HM-105	1MF 50V ELECTRO	
	C196	QETB1HM-105	1MF 50V ELECTRO	
	C197	QETB1HM-105	1MF 50V ELECTRO	
	C198	QETB1HM-105	1MF 50V ELECTRO	
	C203	QETB1EM-106	10MF 25V ELECTRO	
	C204	QETB1EM-106	10MF 25V ELECTRO	

⚠ : SAFETY PARTS

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C241	QETB1HM-475	4.7MF 50V ELECTRO	
	C242	QETB1HM-475	4.7MF 50V ELECTRO	
	C243	QETB1HM-225	2.2MF 50V ELECTRO	
	C244	QETB1HM-225	2.2MF 50V ELECTRO	
	C251	QETB1EM-106	10MF 25V ELECTRO	
	C253	QETB1HM-225	2.2MF 50V ELECTRO	
	C254	QETB1HM-225	2.2MF 50V ELECTRO	
	C255	QFLB1HJ-473	0.047MF 50V MYLAR	
	C256	QFLB1HJ-473	0.047MF 50V MYLAR	
	C281	QETB1HM-106	10MF 50V ELECTRO	
	C282	QETB1HM-106	10MF 50V ELECTRO	
	C283	QCVB1CM-103	0.01MF 16V CERAMIC	
	C284	QCVB1CM-103	0.01MF 16V CERAMIC	
	C285	QETB1AM-476	47MF 10V ELECTRO	
	C286	QETB1AM-476	47MF 10V ELECTRO	
	C302	QETB1HM-105	1MF 50V ELECTRO	
	C341	QCBB1HK-471	470PF 50V CERAMIC	B
	C341	QCBB1HK-471	470PF 50V CERAMIC	C
	C351	QETB1CM-226	22MF 16V ELECTRO	
	C352	QFP81HG-562	5600PF 50V POLY	
	C353	QETB1EM-106	10MF 25V ELECTRO	
	C354	QETB1EM-106	10MF 25V ELECTRO	
	C355	QETB1HM-105	1MF 50V ELECTRO	
	C356	QFLB1HJ-153	0.015MF 50V MYLAR	
	C357	QFLB1HJ-332	3300PF 50V MYLAR	
	C358	QFLB1HJ-332	3300PF 50V MYLAR	
	C359	QFLB1HJ-682	6800PF 50V MYLAR	
	C361	QCS21HJ-221	220PF 50V CERAMIC	
	C362	QCS21HJ-221	220PF 50V CERAMIC	
	C401	QETB1CM-226	22MF 16V ELECTRO	
	C402	QCVB1CM-103	0.01MF 16V CERAMIC	
	C421	QCF21HP-473	0.047MF 50V CERAMIC	
	C431	QETB1AM-476	47MF 10V ELECTRO	
	C432	QCZ0205-155	1.5MF 25V CERAMIC	
	C451	QFLB1HJ-104	0.1MF 50V MYLAR	
	C452	QFLB1HJ-104	0.1MF 50V MYLAR	
	C453	QFLB1HJ-104	0.1MF 50V MYLAR	
	C454	QFLB1HJ-104	0.1MF 50V MYLAR	
	C455	QETB1CM-107	100MF 16V ELECTRO	

⚠ : SAFETY PARTS

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R101	QRD167J-224	220K 1/6W CARBON	
	R102	QRD167J-224	220K 1/6W CARBON	
	R103	QRD167J-512	5.1K 1/6W CARBON	
	R104	QRD167J-512	5.1K 1/6W CARBON	
	R105	QRD167J-100	10 1/6W CARBON	
	R106	QRD167J-100	10 1/6W CARBON	
	R107	QRD167J-512	5.1K 1/6W CARBON	
	R108	QRD167J-512	5.1K 1/6W CARBON	
	R110	QRD167J-223	22K 1/6W CARBON	
	R111	QRD167J-334	330K 1/6W CARBON	
	R112	QRD167J-334	330K 1/6W CARBON	
	R113	QRD167J-432	4.3K 1/6W CARBON	
	R114	QRD167J-432	4.3K 1/6W CARBON	
	R115	QRD167J-272	2.7K 1/6W CARBON	
	R116	QRD167J-272	2.7K 1/6W CARBON	
	R117	QRD167J-272	2.7K 1/6W CARBON	
	R118	QRD167J-272	2.7K 1/6W CARBON	
	R119	QRD167J-752	7.5K 1/6W CARBON	
	R120	QRD167J-752	7.5K 1/6W CARBON	
	R121	QRD167J-223	22K 1/6W CARBON	
	R122	QRD167J-223	22K 1/6W CARBON	
	R123	QRD167J-102	1K 1/6W CARBON	
	R124	QRD167J-102	1K 1/6W CARBON	
	R125	QRD167J-101	100 1/6W CARBON	
	R126	QRD167J-101	100 1/6W CARBON	
	R131	QRD167J-105	1M 1/6W CARBON	
	R132	QRD167J-105	1M 1/6W CARBON	
	R133	QRD167J-105	1M 1/6W CARBON	
	R134	QRD167J-105	1M 1/6W CARBON	
	R135	QRD167J-563	56K 1/6W CARBON	
	R136	QRD167J-472	4.7K 1/6W CARBON	
	R137	QRD167J-103	10K 1/6W CARBON	
	R141	QRD167J-334	330K 1/6W CARBON	
	R142	QRD167J-334	330K 1/6W CARBON	
	R143	QRD167J-682	6.8K 1/6W CARBON	
	R144	QRD167J-682	6.8K 1/6W CARBON	
	R147	QRD167J-822	8.2K 1/6W CARBON	
	R148	QRD167J-822	8.2K 1/6W CARBON	
	R149	QRD167J-102	1K 1/6W CARBON	
	R150	QRD167J-102	1K 1/6W CARBON	
	R151	QRD167J-101	100 1/6W CARBON	
	R152	QRD167J-101	100 1/6W CARBON	
	R157	QRD167J-105	1M 1/6W CARBON	
	R158	QRD167J-105	1M 1/6W CARBON	
	R159	QRD167J-563	56K 1/6W CARBON	
	R160	QRD167J-472	4.7K 1/6W CARBON	
	R161	QRD167J-223	22K 1/6W CARBON	
	R162	QRD167J-223	22K 1/6W CARBON	
	R163	QRD167J-223	22K 1/6W CARBON	
	R164	QRD167J-183	18K 1/6W CARBON	

⚠ : SAFETY PARTS

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R165	QRD167J-103	10K 1/6W CARBON	
	R167	QRD167J-242	2.4K 1/6W CARBON	
	R168	QRD167J-242	2.4K 1/6W CARBON	
	R169	QRD167J-562	5.6K 1/6W CARBON	
	R170	QRD167J-562	5.6K 1/6W CARBON	
	R171	QRD167J-223	22K 1/6W CARBON	
	R172	QRD167J-223	22K 1/6W CARBON	
	R173	QRD167J-561	560 1/6W CARBON	
	R174	QRD167J-561	560 1/6W CARBON	
	R175	QRD167J-562	5.6K 1/6W CARBON	
	R176	QRD167J-562	5.6K 1/6W CARBON	
	R177	QRD167J-103	10K 1/6W CARBON	
	R178	QRD167J-103	10K 1/6W CARBON	
	R179	QRD167J-103	10K 1/6W CARBON	
	R181	QRD167J-202	2K 1/6W CARBON	
	R182	QRD167J-202	2K 1/6W CARBON	
	R183	QRD167J-104	100K 1/6W CARBON	
	R184	QRD167J-104	100K 1/6W CARBON	
	R185	QRD167J-333	33K 1/6W CARBON	
	R186	QRD167J-333	33K 1/6W CARBON	
	R187	QRD167J-103	10K 1/6W CARBON	
	R188	QRD167J-103	10K 1/6W CARBON	
	R189	QRD167J-202	2K 1/6W CARBON	
	R190	QRD167J-202	2K 1/6W CARBON	
	R191	QRD167J-243	24K 1/6W CARBON	
	R193	QRD167J-153	15K 1/6W CARBON	
	R194	QRD167J-153	15K 1/6W CARBON	
	R195	QRD167J-103	10K 1/6W CARBON	
	R196	QRD167J-103	10K 1/6W CARBON	
	R201	QRD167J-104	100K 1/6W CARBON	
	R202	QRD167J-683	68K 1/6W CARBON	
	R203	QRD167J-203	20K 1/6W CARBON	
	R204	QRD167J-913	91K 1/6W CARBON	
	R205	QRD167J-563	56K 1/6W CARBON	
	R206	QRD167J-153	15K 1/6W CARBON	
	R207	QRD167J-104	100K 1/6W CARBON	
	R208	QRD167J-683	68K 1/6W CARBON	
	R209	QRD167J-273	27K 1/6W CARBON	
	R210	QRD167J-753	75K 1/6W CARBON	
	R211	QRD167J-473	47K 1/6W CARBON	
	R212	QRD167J-223	22K 1/6W CARBON	
	R213	QRD167J-104	100K 1/6W CARBON	
	R214	QRD167J-683	68K 1/6W CARBON	
	R215	QRD167J-203	20K 1/6W CARBON	
	R216	QRD167J-223	22K 1/6W CARBON	
	R217	QRD167J-363	36K 1/6W CARBON	
	R218	QRD167J-183	18K 1/6W CARBON	
	R219	QRD167J-104	100K 1/6W CARBON	
	R220	QRD167J-104	100K 1/6W CARBON	
	R221	QRD167J-563	56K 1/6W CARBON	
	R222	QRD167J-823	82K 1/6W CARBON	
	R223	QRD167J-563	56K 1/6W CARBON	
	R224	QRD167J-153	15K 1/6W CARBON	
	R225	QRD167J-104	100K 1/6W CARBON	
	R226	QRD167J-104	100K 1/6W CARBON	
	R227	QRD167J-433	43K 1/6W CARBON	
	R228	QRD167J-683	68K 1/6W CARBON	
	R229	QRD167J-473	47K 1/6W CARBON	
	R230	QRD167J-333	33K 1/6W CARBON	
	R231	QRD167J-104	100K 1/6W CARBON	
	R232	QRD167J-823	82K 1/6W CARBON	
	R233	QRD167J-513	51K 1/6W CARBON	
	R234	QRD167J-333	33K 1/6W CARBON	
	R235	QRD167J-333	33K 1/6W CARBON	
	R236	QRD167J-303	30K 1/6W CARBON	
	R241	QRD167J-473	47K 1/6W CARBON	
	R242	QRD167J-473	47K 1/6W CARBON	
	R243	QRD167J-103	10K 1/6W CARBON	
	R244	QRD167J-103	10K 1/6W CARBON	
	R245	QRD167J-132	1.3K 1/6W CARBON	
	R246	QRD167J-132	1.3K 1/6W CARBON	
	R251	QRD167J-392	3.9K 1/6W CARBON	
	R252	QRD167J-392	3.9K 1/6W CARBON	
	R253	QRD167J-682	6.8K 1/6W CARBON	
	R254	QRD167J-682	6.8K 1/6W CARBON	
	R255	QRD167J-561	560 1/6W CARBON	
	R256	QRD167J-561	560 1/6W CARBON	
	R257	QRD167J-223	22K 1/6W CARBON	
	R258	QRD167J-223	22K 1/6W CARBON	
	R259	QRD167J-332	3.3K 1/6W CARBON	
	R260	QRD167J-332	3.3K 1/6W CARBON	
	R261	QRD167J-684	680K 1/6W CARBON	
	R262	QRD167J-684	680K 1/6W CARBON	
	R263	QRD167J-393	39K 1/6W CARBON	
	R264	QRD167J-393	39K 1/6W CARBON	
	R265	QRD167J-223	22K 1/6W CARBON	
	R266	QRD167J-223	22K 1/6W CARBON	
	R267	QRD167J-103	10K 1/6W CARBON	
	R268	QRD167J-105	1M 1/6W CARBON	
	R275	QRD167J-103	10K 1/6W CARBON	
	R276	QRD167J-103	10K 1/6W CARBON	
	R277	QRD167J-102	1K 1/6W CARBON	
	R278	QRD167J-471	470 1/6W CARBON	
	R281	QRD167J-432	4.3K 1/6W CARBON	
	R282	QRD167J-432	4.3K 1/6W CARBON	

⚠ : SAFETY PARTS

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R302	QRD167J-104	100K 1/6W CARBON	
	R303	QRD167J-102	1K 1/6W CARBON	
⚠	R305	QRZ0077-100	10 1/4W FUSIBLE	
	R351	QRD167J-181	180 1/6W CARBON	
⚠	R352	QRD14CJ-6R8S	6.8 1/4W UNF.CARBON	
	R353	QRD167J-393	39K 1/6W CARBON	
	R354	QRD167J-393	39K 1/6W CARBON	
	R355	QRD167J-301	300 1/6W CARBON	
	R356	QRD167J-561	560 1/6W CARBON	
	R357	QRD167J-511	510 1/6W CARBON	
	R358	QRD167J-911	910 1/6W CARBON	
	R359	QRD167J-332	3.3K 1/6W CARBON	
	R360	QRD167J-332	3.3K 1/6W CARBON	
	R401	QRD167J-105	1M 1/6W CARBON	
	R402	QRD167J-271	270 1/6W CARBON	
	R403	QRD167J-271	270 1/6W CARBON	
	R404	QRD167J-430	43 1/6W CARBON	
	R405	QRD167J-910	91 1/6W CARBON	
	R408	QRD167J-271	270 1/6W CARBON	
	R409	QRD167J-271	270 1/6W CARBON	
	R411	QRD167J-103	10K 1/6W CARBON	
	R412	QRD167J-223	22K 1/6W CARBON	
	R413	QRD167J-103	10K 1/6W CARBON	
	R414	QRD167J-102	1K 1/6W CARBON	
	R421	QRD167J-153	15K 1/6W CARBON	
	R422	QRD167J-151	150 1/6W CARBON	
	R423	QRD167J-103	10K 1/6W CARBON	
	R452	QRD167J-184	180K 1/6W CARBON	
	R453	QRD167J-224	220K 1/6W CARBON	
	R454	QRD167J-224	220K 1/6W CARBON	
	R455	QRD167J-224	220K 1/6W CARBON	
	R456	QRD167J-683	68K 1/6W CARBON	
	R457	QRD167J-153	15K 1/6W CARBON	
	R458	QRD167J-183	18K 1/6W CARBON	
	R461	QRD167J-682	6.8K 1/6W CARBON	
	R462	QRD167J-682	6.8K 1/6W CARBON	
	R463	QRD167J-123	12K 1/6W CARBON	
	R464	QRD167J-123	12K 1/6W CARBON	
	R465	QRD167J-563	56K 1/6W CARBON	
	R466	QRD167J-563	56K 1/6W CARBON	
	R467	QRD167J-163	16K 1/6W CARBON	
	R468	QRD167J-163	16K 1/6W CARBON	
	R469	QRD167J-183	18K 1/6W CARBON	
	R470	QRD167J-183	18K 1/6W CARBON	
	R471	QRD167J-103	10K 1/6W CARBON	
	R472	QRD167J-103	10K 1/6W CARBON	
	R475	QRD167J-103	10K 1/6W CARBON	
	R476	QRD167J-103	10K 1/6W CARBON	
	R501	QRD167J-621	620 1/6W CARBON	
	R502	QRD167J-621	620 1/6W CARBON	
	RA401	QRB049J-103	10K 1/10W R.NETWORK	
	RA402	QRB089J-103	10K 1/10W R.NETWORK	
	RA403	QRB049J-103	10K 1/10W R.NETWORK	
	VR111	QVPA601-501A	500 VARIABLE	
	VR112	QVPA601-501A	500 VARIABLE	
	VR113	QVPA601-104A	100K VARIABLE	
	VR114	QVPA601-104A	100K VARIABLE	
	VR141	QVPA601-501A	500 VARIABLE	
	VR142	QVPA601-501A	500 VARIABLE	
	VR143	QVPA601-104A	100K VARIABLE	
	VR144	QVPA601-104A	100K VARIABLE	
	VR185	QVPA601-503A	50K VARIABLE	
	VR186	QVPA601-503A	50K VARIABLE	
	VR361	QVPA601-503A	50K VARIABLE	
	VR362	QVPA601-503A	50K VARIABLE	
	VR451	QVPA603-103A	10K VARIABLE	
	VR452	QVPA603-203A	20K VARIABLE	

⚠ : SAFETY PARTS.

OTHERS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	J408	EMV5109-009A	PLUG ASSY 9PIN	
	J409	EMV5109-009A	PLUG ASSY 9PIN	
	J410	EMV5133-003	PLUG ASSY 3PIN	
	J411	EMV5133-003	PLUG ASSY 3PIN	
	L109	EQL2106-223	INDUCTOR	
	L110	EQL2106-223	INDUCTOR	
	L151	EQL2106-223	INDUCTOR	
	L152	EQL2106-223	INDUCTOR	
	L351	ENZ6002-012	OSCILLATOR COIL	
	P101	QMV5011-003K	PLUG ASSY 3PIN	
	P102	QMV5011-007K	PLUG ASSY 7PIN	
	S501	ESB1100-007	LEAF SWITCH A PACK	
	S502	ESB1100-007	LEAF SWITCH A CrO2	
	S503	ESB1100-007	LEAF SWITCH REV REC	
	S504	ESB1100-007	LEAF SWITCH B CrO2	
	S505	ESB1100-007	LEAF SWITCH B PACK	
	S506	ESB1100-007	LEAF SWITCH B METAC	
	S507	ESB1100-007	LEAF SWITCH FWD REC	
	S511	ESP0001-023M	TACT SWITCH A ◀	
	S512	ESP0001-023M	TACT SWITCH A ◀◀	
	S513	ESP0001-023M	TACT SWITCH A ▶▶	
	S514	ESP0001-023M	TACT SWITCH A ▶	
	S515	ESP0001-023M	TACT SWITCH B ◀	
	S516	ESP0001-023M	TACT SWITCH B ◀◀	
	S517	ESP0001-023M	TACT SWITCH B ▶▶	
	S518	ESP0001-023M	TACT SWITCH B ▶	
	S519	ESP0001-023M	TACT SWITCH A ■	
	S520	ESP0001-023M	TACT SWITCH B ■	
	S521	ESP0001-023M	TACT SWITCH B ⊙	
	S522	ESP0001-023M	TACT SWITCH B ❚❚	
	S523	ESP0001-023M	TACT SWITCH A ▶▶ B	
	S524	ESP0001-023M	TACT SWITCH A ▶ B	
	S525	ESP0001-023M	TACT SWITCH B.SKIP	
	S526	ESP0001-023M	TACT SWITCH FUZZY DIRECT	
	S527	ESP0001-023M	TACT SWITCH FUZZY AUTO	
	S528	QSS4001-E01M	SLIDE SWITCH DOLBY MODE	
	S529	QSS4001-E01M	SLIDE SWITCH 9PIN	
	BC408	EWS269-A916	SOCKET WIRE 9PIN	
	BC409	EWS269-A916	SOCKET WIRE 2PIN	
	BC410	EWS243-054	SOCKET WIRE 2PIN	
	BC411	EWS243-054	SOCKET WIRE 2PIN	
	EP001	E70859-001	EARTH PLATE	
	FW401	EWR38B-16LST	FLAT WIRE 8PIN	
	FW402	EWR37B-10LST	FLAT WIRE 7PIN	
	FW403	EWR37B-10LST	FLAT WIRE 7PIN	
	FW404	EWR37B-10LST	FLAT WIRE 7PIN	
	FW405	EWR37B-10LST	FLAT WIRE 7PIN	
	FW406	EWR38B-08LST	FLAT WIRE 8PIN	
	FW407	EWR34B-08LST	FLAT WIRE 4PIN	
	FW410	EWR38B-16SST	FLAT WIRE 8PIN	
	JB001	EMV7141-015	CONNECTOR 10PIN	
	JT411	EMV7122-004	CONNECTOR 4PIN	
	JT412	EMV7122-004	CONNECTOR 4PIN	
	JT413	EMV7122-103	CONNECTOR 3PIN	
	JT414	EMV7122-004	CONNECTOR 4PIN	
	JT415	EMV7122-004	CONNECTOR 4PIN	
	JT416	EMV7122-103	CONNECTOR 3PIN	
	SW351	QSS6A12-E01	SLIDE SWITCH BEAT CUT SW	B
	SW351	QSS6A12-E01	SLIDE SWITCH BEAT CUT SW	C
	XT401	ECX0004-194KM	RESONATOR	

⚠ : SAFETY PARTS